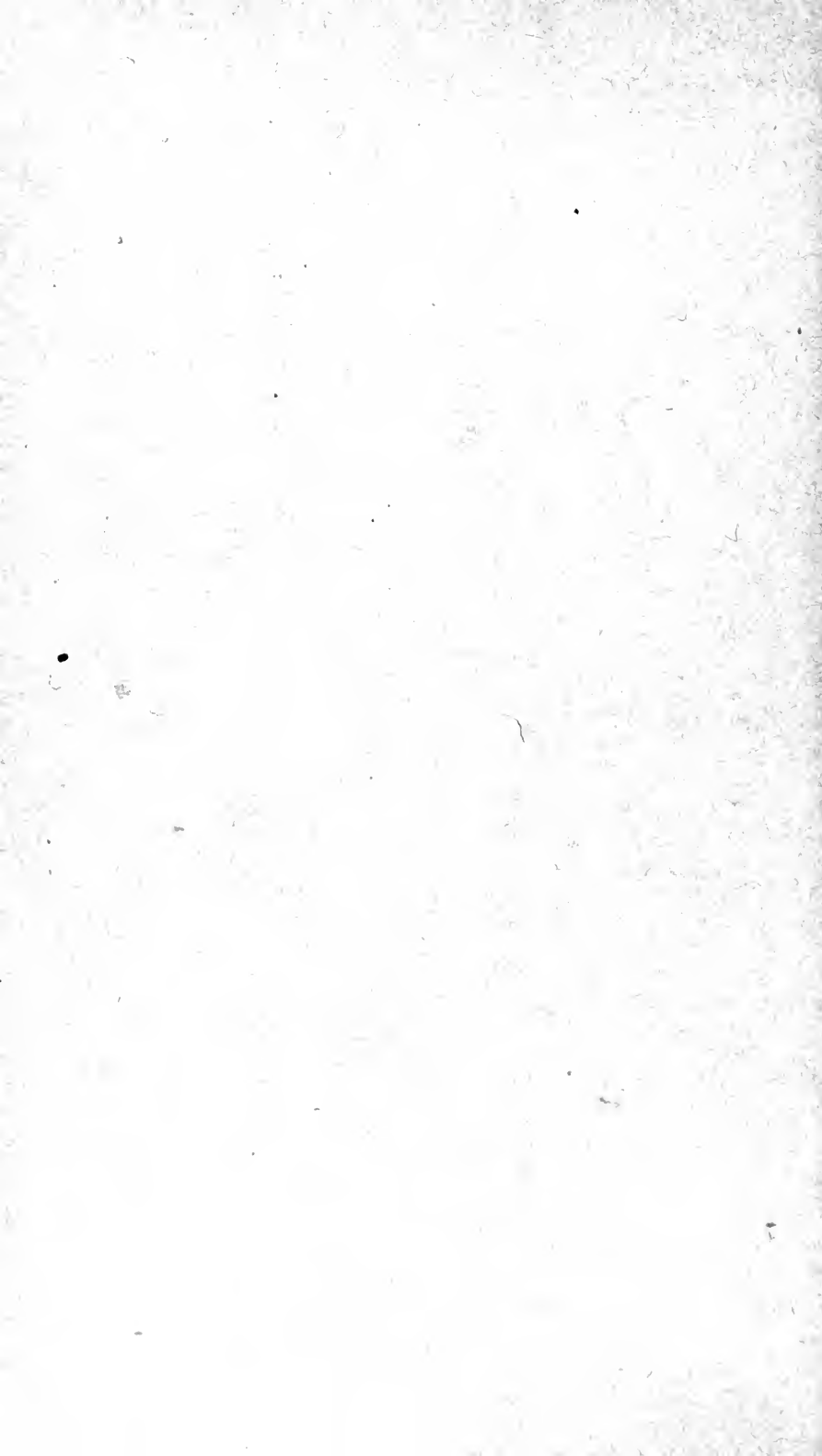


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Issued December 20, 1906.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF CHEMISTRY—BULLETIN No. 102.

H. W. WILEY, Chief of Bureau.

FOREIGN TRADE PRACTISES

IN THE

MANUFACTURE AND EXPORTATION OF ALCOHOLIC BEVERAGES AND CANNED GOODS.

SUMMARY OF AN INVESTIGATION MADE IN GREAT BRITAIN
AND IRELAND, GERMANY, AND FRANCE.

BY

H. W. WILEY,

Chief of the Bureau of Chemistry.



WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1906.

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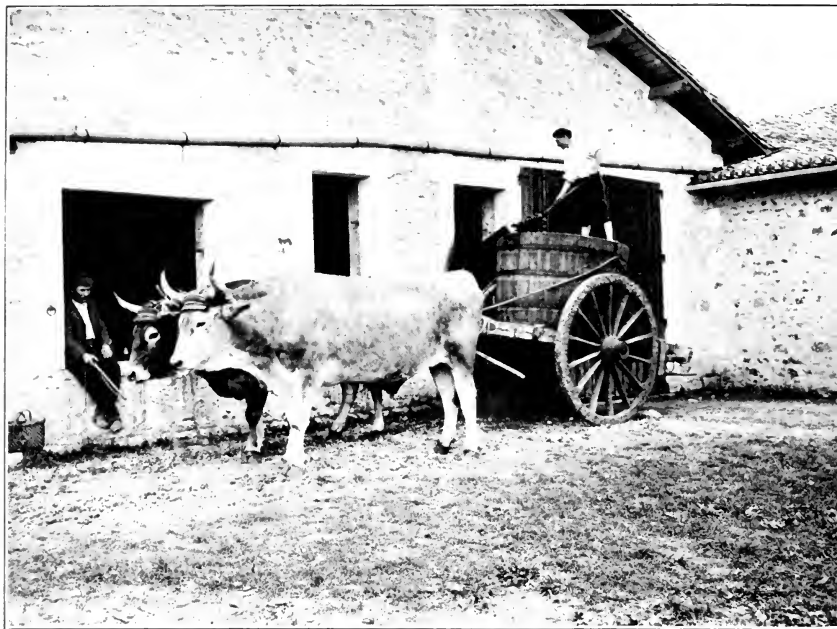


FIG. 1.—VINTAGE SCENE, COGNAC.



FIG. 2.—VERY OLD DISTILLERY, COGNAC.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF CHEMISTRY,

Washington, D. C., May 12, 1906.

SIR: Many inquiries have been received as to the findings of a recent inspection of the existing conditions of trade in Scotch and Irish whiskies, German and French wines, and French brandies. Incidentally, the preparation of canned goods, especially vegetables, sardines, and mushrooms, was inspected as opportunity offered. This investigation was considered necessary to the just and effective inspection of imported food products authorized by Congress to be made by the Secretary of Agriculture. Much of the information obtained was of a confidential nature, but I transmit herewith for your approval a summary of the investigation, which it is believed will be of interest both to the trade and to the consuming public. It is recommended that this report be published as Bulletin No. 102 of the Bureau of Chemistry.

Respectfully,

H. W. WILEY,

Chief of Bureau.

HON. JAMES WILSON,

Secretary of Agriculture.

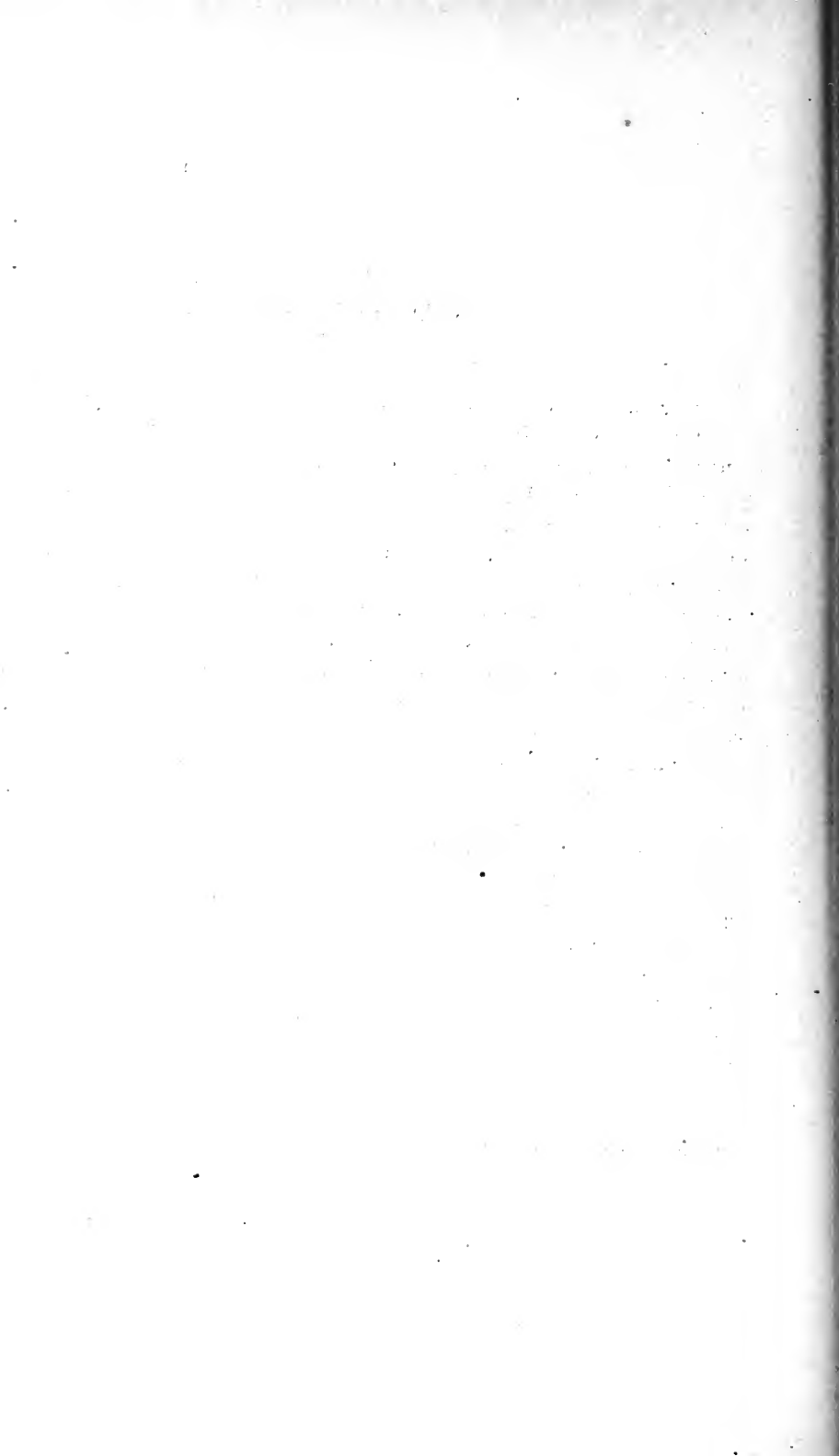
INTRODUCTION.

In harmony with the instructions of the Secretary of Agriculture, I visited, during July, August, and September, 1905, some of the principal regions in Great Britain and Ireland, Germany, and France, where whisky, wine, and brandy are produced. The chief object kept in view in these investigations was to study the preparation, preservation, and character of the products above mentioned as offered for importation into the United States, in order that just and effective standards and regulations might be adopted for their inspection on arrival at our ports. Special attention was given to the disputed questions which have arisen as to the use of sulfurous acid in wines, the definitions of whiskies (Scotch, Irish, "blended," and "mixt"), etc.; and the conclusions reached, based on these investigations, furnish important data for the conduct of the imported-food inspection work of this Bureau.

It is desired to acknowledge the uniform courtesy received from manufacturers, agents, merchants, officials of the several governments, and our own consuls. Everywhere the greatest liberty for inspection was allowed and the most cordial assistance given. Even the books relating to prices, ages, and character of blends were freely shown, and the methods of conducting warehouse operations fully explained. I have reason to believe, therefore, that the information obtained is credible and representative of the true state of the legitimate trade.

H. W. WILEY,
Chief, Bureau of Chemistry.

WASHINGTON, D. C., *May 5, 1906.*



CONTENTS.

	Page.
The whiskies of Great Britain and Ireland.....	7
Scotch whisky.....	7
Malted barley distilleries.....	7
Grain spirit distilleries.....	12
Irish whisky.....	14
Warehousing.....	17
Bottling in warehouses.....	19
Official definitions.....	20
Summary of trade practises.....	21
The English test case relative to Scotch and Irish whiskies.....	22
German wines.....	29
Method of manufacture.....	29
Classification.....	30
Sugared wines.....	31
Conclusions.....	33
French wines and brandies.....	33
Bordeaux wines.....	33
General discussion.....	33
The white wines of Graves and Sauternais.....	37
The red wines of the Médoc.....	38
Cognac brandies.....	39
Execution of the imported food law.....	41
French canned vegetables.....	41
French sardines.....	43
Governmental certificates for exported food products.....	44

ILLUSTRATIONS.

PLATES.

PLATE I. Fig. 1.—Vintage scene, Cognac.	Fig. 2.—Very old distillery,	Page.
Cognac.....	Frontispiece.	
II. Fig. 1.—Wine press in operation, Cognac.	Fig. 2.—A Cognac	
brandy distillery.....		40

TEXT FIGURES.

FIG. 1. Four types of pot stills used in the north of Scotland.....	9
2. A modern form of condenser, Scotland.....	10
3. Scotch pot stills, showing instalment.....	11
4. Two types of Irish pot stills.....	14
5. Irish pot stills, showing attachments.....	15

FOREIGN TRADE PRACTISES IN THE MANUFACTURE AND EXPORTATION OF ALCOHOLIC BEVERAGES AND CANNED GOODS.

THE WHISKIES OF GREAT BRITAIN AND IRELAND.

SCOTCH WHISKY.

MALTED BARLEY DISTILLERIES.

There are two kinds of distilleries found in Scotland—those producing grain spirits and those using malted barley only—but by far the greater number belong to the latter class. These distilleries are divided into four groups, according to location, and the number of distilleries in each group is about as follows: Highland and not classified, 108; Lowland, 33; Campbeltown (island of Kintyre), 21, and Islay, 9. This is only an approximate classification. Many changes take place in the number of distilleries in active service, and the classification is by no means perfect. These figures, however, give a general idea of the distribution of the distilleries.

Much of the barley used is home grown, but the amount available is insufficient, and considerable quantities are imported from Denmark, Hungary, and the United States. The California barleys are highly prized because they can be used in the early part of the distilling season—that is, in September—before the home-grown barleys are sufficiently dry. Often the barley in the north of Scotland is not all harvested until late in August.

Malting is generally conducted in the old-fashioned way, by steeping the grain until thoroly moist and spreading it on cemented floors well protected by heavy walls against the cold. Even in winter the malting takes place without any artificial heat. In very cold weather the layers of grain are made thicker on the floor and the heat of germination prevents freezing. The lower the temperature at which the malting takes place the better the product, tho the time required is longer. From ten to sixteen days are usually required to complete the germination. In some cases the malting is accomplished by the so-called pneumatic process, in revolving drums which move very

slowly, so as to keep the sprouting grain gently stirred. A current of air is drawn thru the apparatus and this air is warmed or cooled and made wet or dry according to the indications of the thermometer and hygrometer. This method was found in use in only one of the distilleries.

After the germination is completed the malt is dried by being spread on a perforated tile or wire floor over an open fire fed by peat and anthracite coal or coke. The peat is specially prepared and is kept dry for a year or more before using. The older peats are said to give the finest flavors to the product. The empyreumatic emanations from the smoldering peat are absorbed by the malt, subsequently dissolved in the mash, and pass over into the distillate, imparting thereto the much-prized smoky flavor so well known in Scotch whisky. The use of water which has filtered thru the peat bogs is also deemed of great efficacy in distilling the finest Scotch and Irish whiskies. Some of the kilns are made with double floors, the second placed about 5 feet above the first. The green malt is placed on the upper floor and let down to the lower as soon as the charge thereon is removed. This practise, however, is by no means general. The malt is dried until the moisture is reduced to 2 per cent or less, care being exercised to avoid any burning. To this end the layer of malt is frequently turned during the process. Considerable quantities of malt are kept in store, and it is generally believed that old malt makes a better product than new.

After grinding, the malt is mashed in large vats furnished with stirring machinery, which keeps the mass in constant motion. The mass is gradually heated, but not above the point of the activity of the diastase, 140° F., at least until the starch is all converted. The bottom of the mash tun is finely perforated, so that when this operation is completed the liquid part of the contents may be drawn off to the coolers and the residual grains separated for cattle food. These grains are sold in a moist state for neighborhood consumption or dried for shipment to a distance. The hot wort is past over coolers and run into the fermentation vats, called "wash backs." To the cooled wort the yeast is added and the fermentation conducted at ordinary temperatures. The fermentations are finished in from forty-eight to seventy-two hours and the beer is then ready for distillation.

In all of the distilleries inspected the distillation is conducted in pot stills heated over an open fire. The stills have necks of various shapes and sizes. In some cases the neck passes in a horizontal position to the worm, immersed in flowing water, and the products of any condensation in this horizontal section are returned by an attached pipe to the still. This is by no means a universal arrangement, however. The stills are usually arranged in sets of three, one

large beer still for making low wines and two smaller low-wine stills for making the high wines or crude whisky. In the beer or wash still is found a scraper, usually in the form of a chain, properly fixt to revolving arms which fit the convex inner surface of the bottom of the still and prevent the deposit and burning of solid matter during the distillation. This scraper is operated by a per-

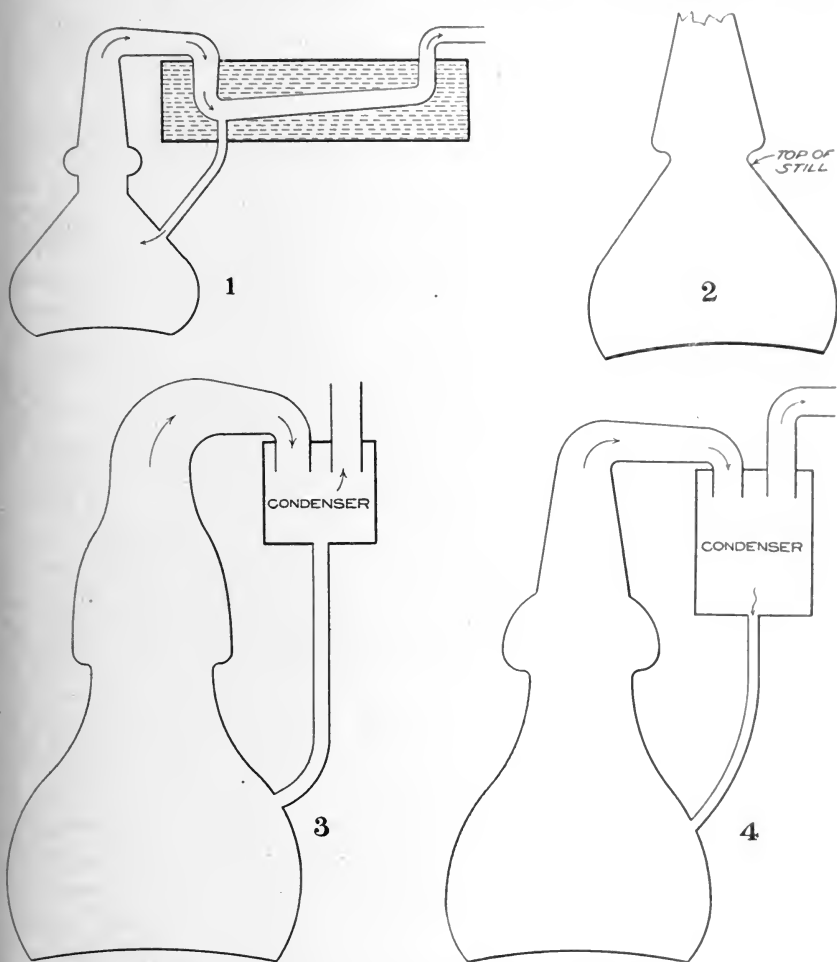


FIG. 1.—Four types of pot stills used in the north of Scotland.

pendicular shaft passing into the center of the still, usually with an air-tight journal in the top of the neck.

The accompanying illustrations (fig. 1) show some of the variations in the form of the stills used at the different distilleries in the north of Scotland. Much stress is justly laid by all distillers on the shape of the still, and it seems very probable that the character of the whisky is markedly affected by its form and the length of the

neck, controlling as these factors do the incidental rectification which takes place during the distillation.

The still shown as figure 1, No. 1, is covered with a nonconducting material said to effect a considerable reduction in the quantity of coal used. There are two sets of these stills, heated over an open fire, a wash still and two low-wine stills comprizing each set. The neck of the still has an enlargement near the bottom, instead of being regularly horn shaped, as were those in Glasgow, and the horizontal portion of the neck is provided with a condensing jacket.

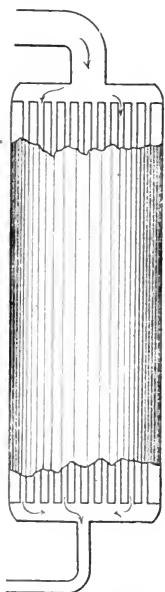


FIG. 2. — A modern form of condenser, Scotland.

The type shown as No. 2 in figure 1 has no covering, tho heated over an open fire, and no condenser in the horizontal part of the neck. The neck is peculiar in shape, having straight conical sides until it assumes a horizontal position, and is rather shorter than usual, not exceeding 10 feet. There are two sets of stills, of which the wash still holds a little over 6,000 gallons and the low-wine stills half that amount.

Another modification is shown as Nos. 3 and 4, figure 1. Instead of the horizontal jacketed neck piece, the very large neck ends in a vessel which acts as a condenser, being surrounded by a jacket containing water, and from which the products of condensation return directly to the still. The low-wine still differs slightly in shape from the wash still, but is constructed on the same principle. The stills are heated over an open fire, as in the other cases. The newer set of stills at this distillery have a condenser composed of a large number of small copper tubes placed in a cylindrical vessel thru which alcohol flows (fig. 2). This form of condenser takes up much less space than the old form and is considered quite an improvement.

The distillation is carried on until the alcoholic content of the distillate becomes too low for use as low wine. The residue is then distilled until the alcohol is all run off, and this portion of the distillate is added to the next charge of beer. The spent beer is disposed of in various ways. It is not permitted to discharge this by-product into running streams because of the pollution which is caused thereby. If possible, it is sold for cattle food, but it is not highly prized for this purpose. Sometimes it is settled in cement tanks sunk in the earth and the solid matter is used as manure. In some distilleries it is put into septic tanks and destroyed by bacterial action; in others furnaces are erected in which the spent beer is burned.

The low wines are conducted to the small stills and subjected to a second distillation for the purpose of bringing them to an alcoholic strength suitable for bonding, namely, from 55 to 60 per cent by

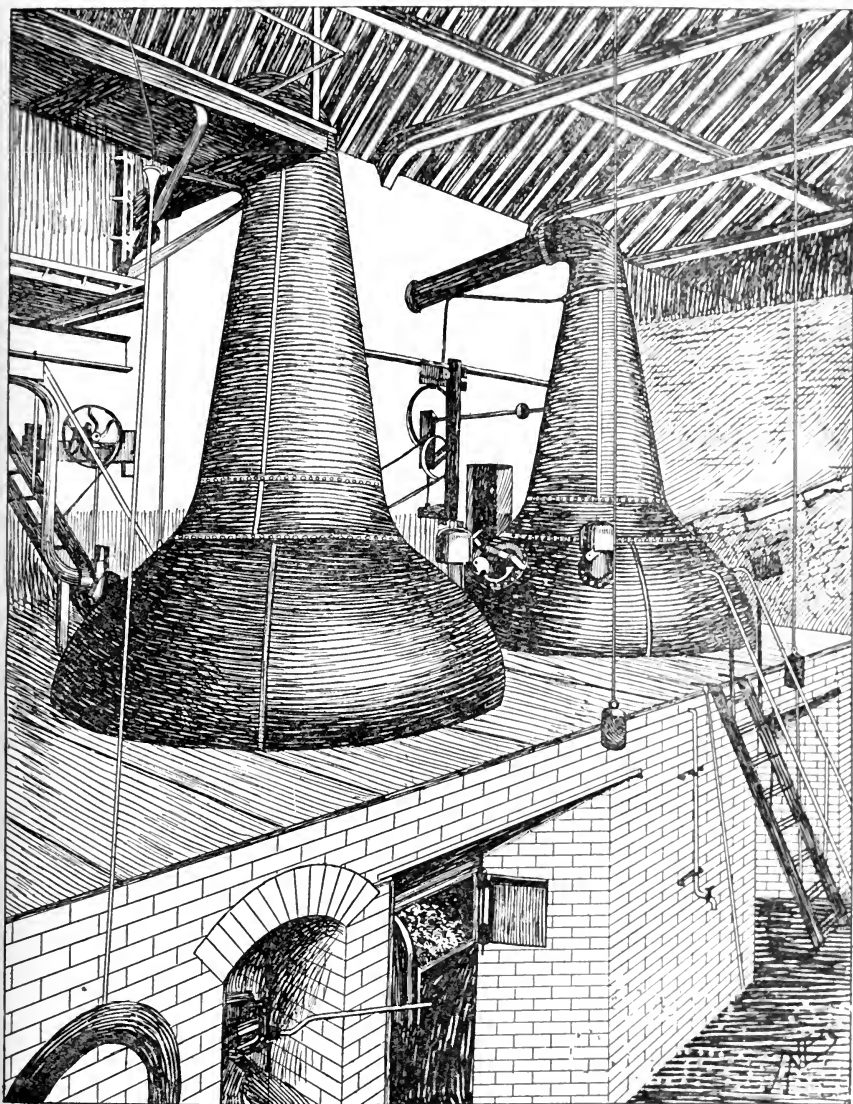


FIG. 3.—Scotch pot stills, showing instalment.

volume of alcohol. The first parts that come over are very rich in alcohol, and as the distillation proceeds the alcoholic strength falls. When the distillate, after mixing, reaches the strength desired, as

given above, the remainder of the distillate is collected in a separate vessel and mixt with the low wines of the next charge. When the alcohol is all over, or nearly so, the lees are drawn off, treated as spent beer, and the still recharged with low wines plus the low alcoholic residues from the previous distillation. Thus practically all the volatile matters are finally collected into a spirit of from 55 to 60 per cent by volume of ethyl alcohol. The lees and spent beer of course contain more or less of the alcohols and other bodies of high boiling points and in this way a portion of such bodies is removed. There is always enough of them, however, to give character and flavor to the distillate and provide those bodies which in the process of aging give the distinctive flavor and value to the product. Every part of the process is controlled and checked by the excise officers, whose lock and seal are kept on every valve and other opening whence any of the spirits might be surreptitiously withdrawn. Figure 3 gives a general view of the instalment of two Scotch pot stills.

The spirit is stored in oak casks, and those in which sherry wine has been matured are particularly sought after. A good sherry cask often sells for as much as 50 shillings. The sherry wood is said to yield a peculiar and desirable flavor to the whisky and also to impart a deeper color thereto than is given by the plain wood. Previous charring of the inside of the plain wood barrels is not practised, and these casks color the spirit very little even after the lapse of five years.

Whisky made in the manner just described is genuine Scotch whisky, and it is doubtful if any other product, without some qualifying word, is entitled to bear that name.

GRAIN SPIRIT DISTILLERIES.

The grain spirit, or silent spirit, distilleries, while not numerous, are of very large capacity and without doubt make more gallons of spirit than are produced by the hundred and more malt distilleries. The grain spirit distilleries are by no means all in Scotland. Many of them are in England and Ireland, and the products are used for mixing with malt whisky.

The grain used in these distilleries, as far as could be ascertained, is without exception Indian corn imported from the United States. The process employed is extremely simple. The Indian corn is ground, mashed with sufficient malt to convert the starch into sugar, fermented in the usual way, and the beer thus produced is run at once into a so-called patent still. The patent still is composed of two parts, the first a complex system of copper pipe 6

inches or more in diameter, and in a still of moderate size a mile or more in length (5,000 to 6,000 feet), built up in parallel layers into a column 50 feet or more in height. The tubes are immersed in an atmosphere of steam, and in these tubes the rectification is accomplished, the greater part of all the congeners of fermentation except ethyl alcohol being separated by passing thru these tubes.

The fusel oils are collected and utilized in commerce for making amylacetate, etc. The ethyl alcohol coming from the rectifying part of the still enters the second part, called the analyzer, which is a common chambered still in which the ethyl alcohol is condensed to about 94 per cent, by volume, pure alcohol. There is, of course, an incidental rectification due to this concentration, but the products of this rectification are not collected. The resulting product is an alcohol (ethyl) of high strength and purity. It is not a perfectly pure alcohol, but one of approximate purity, having left in it only a small part of those congeners of fermentation which give bouquet and flavor to pure whisky.

This product is also stored in wood, as was described in the case of malt whisky. It is the grain or silent spirit which is so abundantly used for mixing with malt whisky to produce the "Scotch whisky" usually met with in commerce. In respect of price the grain spirit, as described above, is much cheaper per proof gallon when first made than malt whisky of the same alcoholic strength. For instance, a proof gallon (English) of grain spirit is worth, when made, say, 30 cents. A gallon of malt whisky of the same strength is worth 50 cents. The commercial advantage of using large quantities of grain spirit in the preparation of the whiskies of commerce is at once apparent. The manufacture of grain spirit is conducted under the same excise supervision and regulations as are applied to malt whisky. It follows that it is possible for the excise officials to follow each package of such spirit from the time it is made until it is delivered for domestic consumption or for export.

A mixture of yellow and white maize is used in the manufacture of this grain spirit. Inspection of the maize used showed it to be of fair average quality. The amount of malt employed, aside from the quantity necessary to convert the starch, is optional with the manufacturer. Since the distillate is rectified, there is no advantage, in so far as the subsequent use of the product for mixing is concerned, in using a larger quantity of malt than is required to furnish the requisite vigor of diastatic action. Samples of malt whisky and of grain spirit were secured under careful supervision in many distilleries, sealed, and forwarded to the Bureau of Chemistry for analysis.

IRISH WHISKY.

The number of distilleries in Ireland is small compared to Scotland, but they are generally of a very much greater capacity. Distilleries in the north of Ireland, and at Belfast and Dublin, were inspected. Irish whisky is quite different in composition from Scotch. In Ireland very little pure malt whisky is made. On the other hand, it may be said that Irish whisky does not resemble that of American origin to any greater extent than it does Scotch. Only one distillery of those visited in Ireland uses malt alone. The others use

malt, together with unmalted barley and a small quantity of other cereals, such as rye, wheat, and oats. Indian corn, apparently, is not used at all, or at least only to a limited extent. The malt which is used is not dried over peat, and hence the Irish whisky does not have that smoky taste so characteristic of the Scotch product.

Usually, when unmalted grain is used, malt makes up about one-half of the whole mash. The other half consists largely of unmalted barley, very small quantities of rye or oats, or both, being used. The mashing, the cooling of the wort, and the fermentation are conducted as in Scotland. The distilleries are of great capacity,

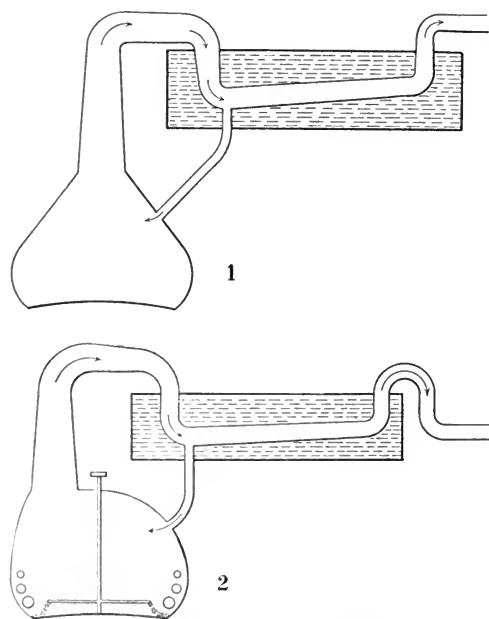


FIG. 4.—Two types of Irish pot stills.

and the vats and stills correspondingly large in size. For this reason the pot stills, altho usually heated over an open fire, are reenforced by steam coils. The method of distillation is the same as in Scotland, but the whisky is warehoused at a much higher proof, viz, about 67 per cent by volume. Practically all the beer stills are supplied with a horizontal attachment to the neck before the pipe enters the worm, where a partial condensation takes place, this product being returned directly to the still, thus producing low wines of greater alcoholic strength. The finished product is thus secured with a higher per cent of alcohol.

The accompanying illustration (fig. 4) shows the form of the stills used at two of the Dublin distilleries. There are six huge

pot stills of the type shown as No. 1, figure 4, holding from 19,000 to 25,000 gallons each, under which 50 tons of coal a day are burned. In addition to the open fire each still, except the spirit

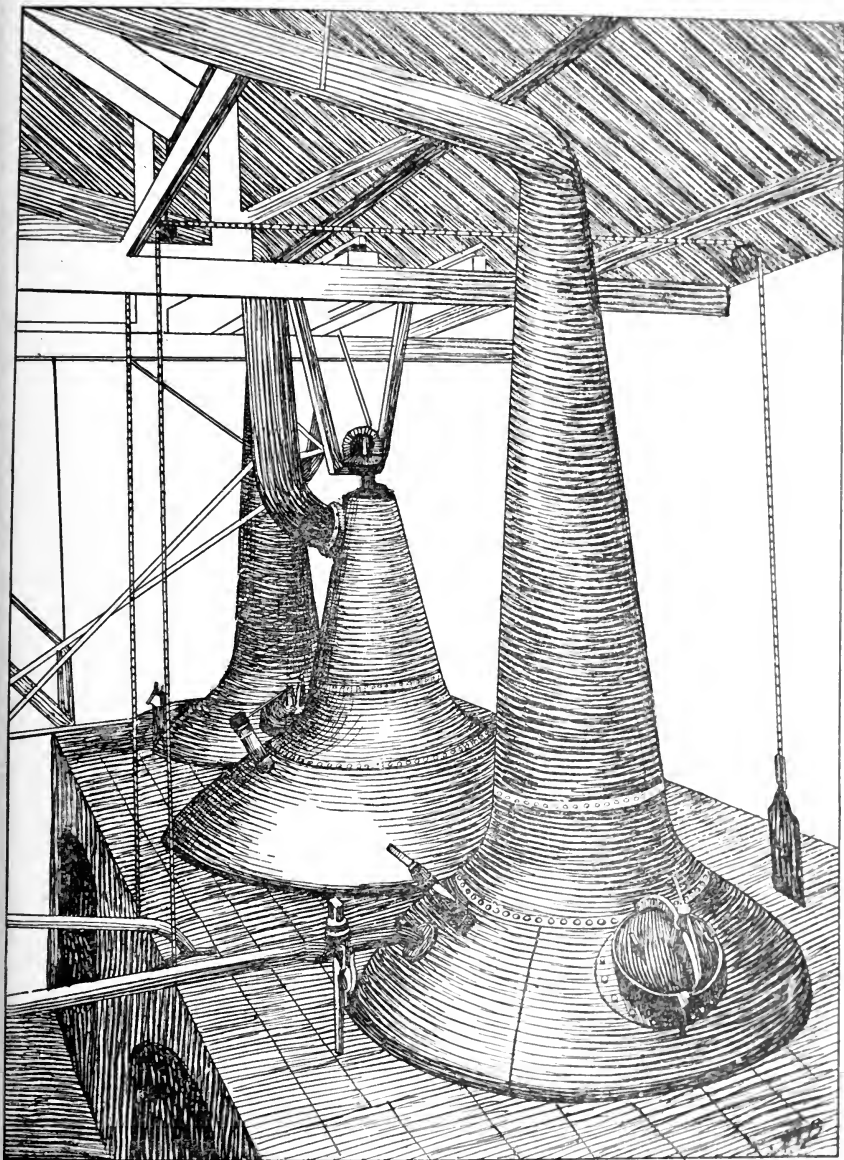


FIG. 5.—Irish pot stills, showing attachments.

still, has an auxiliary steam coil. The stills are in batteries of four, two for producing low wines, one for special treatment of the feints, and one low wine still for the purpose of making the spirits of the

proper strength. The extra concentrating still for the feints is required because Irish whisky is distilled at a very high proof, namely, 49 over proof British. It is bonded at 25 over proof British, much stronger than the Scotch whisky, which is usually bonded at 11 over proof. It will be noticed that the stills have rather high necks, curving down into a long horizontal portion lying in a trough surrounded with cold water. The condensation is returned to the still from this horizontal condenser in a continuous stream. It is evident that the triple distillation of the feints and the cooler attached to the horizontal portion of the neck secure the return of a considerable portion of the heavy alcohols to the still and their final removal in the burnt ale.

At another Dublin distillery presenting the same general type of still the rouser or stirrer enters directly at the top of the still, the neck being placed at one side to make this arrangement possible (fig. 4, No. 2). A general view of some Irish pot stills, showing attachments, is given in figure 5.

There are grain spirit stills also in Ireland, and one of these in Dublin was visited. It is claimed in this distillery that the production of grain spirit is incidental to the manufacture of yeast, which is the principal product, the grain spirit being a by-product. Immense quantities of yeast are made at this distillery and supplied to bakers all over the United Kingdom. Indian corn, converted with malt, is the grain chiefly used. It is said to give a better yeast than can be produced from any other cereal.

Mixing and compounding warehouses are also found in Ireland, but it is claimed that a great deal of Irish whisky, guaranteed to be genuine, is bottled strictly for the export trade to the United States.

It is only fair to say, in respect of these so-called blended goods, especially "Scotch whisky," so called, that the compounders express an entire willingness to label such goods "blended" or "compounded" should our regulations require such a designation. It is stated that the genuine Scotch whisky, while it can be drunk with impunity in the Highlands, is not suitable for consumption in London and other parts of the Empire without being softened by admixture with a spirit of low flavor. The compounders would not like, however, to put upon the label the degree of dilution practised, nor to name the diluting spirit. Compounds are made of from 20 to 80 per cent of grain spirit, according to the price the customer is willing to pay. Every vat compounded is accurately described in the books of the excise officers, so that an official certificate could be given were it in harmony with the regulations. Similar books are kept also by the compounder. Both sets of books were freely shown.

WAREHOUSING.

As soon as the spirits are made, whether from malt or from Indian corn, they are gaged and placed in casks under the supervision of the excise officers. The term "warehouse" is described as follows in the Regulations of Boards of Customs and Inland Revenue, page 12, paragraph 13: "A secure place, approved by the board, for the general service of the public, for the deposit of dutiable goods on which the duty has not been paid." The doors of a warehouse must open into a street or public way. It must be apart from a distillery or rectifying house. It must not have connection of any kind with the premises of a dealer in spirits.

Spirits and wines may be racked, vatted, or blended as often as required by the proprietor on his written request made in proper form. These operations, however, may only be performed in a special compartment of a warehouse used solely for that purpose. (Paragraph 301, Excise Regulations.) The proprietor may mix wines or foreign spirits together and may elect the name to describe the process, either vatting or blending, and may make the resulting product accordingly, but whenever any other article, allowed by the regulations, is added, or if any part of the spirits used have been previously vatted or blended, the operation shall be called "vatting." (Paragraph 303.) It is evident from this regulation that the excise desires to limit the word "blending" to a mixture of spirits or fermented beverages of the same kind. This is an important distinction and a just one. An effort should be made to restrict the use of the word "blend" in the manner indicated.

In the malt distilleries visited there was no vatting or blending practised, and no mixing with grain or other spirits. The pure malt whisky is sent to the large rectifying warehouses in Edinburgh, Glasgow, and London for these operations.

For home consumption, only the following kinds of spirits may be vatted or blended:

- (a) Wines of the same sort, country, and rate of duty.
- (b) Foreign spirits of the same denomination, irrespective of the country of importation.
- (c) British spirits of the same sort.

By special permission of the board the following kinds of beverages may also be vatted or blended for home consumption:

- (a) Wines which have been fortified with more than 10 per cent of spirit.
 - (b) Wines which have been fortified to a strength beyond 40°.
 - (c) Wines which have been unintentionally fortified beyond 40°.
- (Paragraphs 307, 310.)

One of the most important points connected with the warehouse treatment of wines and spirits is that manipulations are allowed for export which are not permitted for home consumption. For instance, it is provided that "wines or foreign spirits not sweetened or mixed, of different sorts, may be mixed together for exportation only." (Paragraph 321.) British plain spirits may also be mixt for exportation with foreign spirits not sweetened or mixt. On one head of the cask in such cases the word "mixed" must be marked. (Paragraphs 323-334.) When British compounds exceeding 11 over proof are mixt with British compounds not exceeding 11 over proof it must be written in the dispatch "for exportation only." (Paragraph 326.) Imitation rums—that is, any mixture not rum but simulating in some way that substance—may be mixt with other foreign spirits and are described in the accounts as "foreign spirits of various sorts mixed in bond." (Paragraph 324.) This provision permits the concoction of almost any kind of mixture the merchant may desire to export.

Should "spirits of wine" (alcohol) on which the allowance has been paid on deposit be at any time mixt with plain British spirits, the allowance payable on the exportation of the latter is to be determined, but the spirits will be inadmissible for home consumption. (Paragraph 326.) Ordinary finings, such as Spanish earth, albumen, patent finings not sweetened, isingglass, milk, etc., may be added to wines not exceeding 42° of alcoholic strength for home consumption as frequently as the proprietor may deem necessary. Sweet finings may, with the sanction of the board, be used in wines for home consumption in quantities not exceeding 1 per cent, but without limit for exportation. (Paragraph 331.) Coloring or sweetening matter may, with the board's sanction, be added to wines of different sorts mixt in warehouse for exportation. The casks are to be marked "mixt and sweetened wines" and entered on the books for exportation only. (Paragraph 332.)

We now come to some of the most important of the regulations for warehouses as affecting the different treatments of beverages intended for home consumption and for export. It is provided that coloring matter in a fluid state may be added to British spirits for home consumption in the proportion of 1 pint to each 80 gallons. When such coloring matter has been added a full statement concerning it must be entered in the books and all further removals or manipulations of spirits so colored must be accompanied by statements of the fact. (Paragraphs 334-335.) It is then possible for the excise officer to know thru all vattings and blendings just what portions are artificially colored. The regulations thus guard the consumer's rights respecting the use of artificial color, and no other ingredients, except all forms of British-made spirits and this coloring matter,

may enter into any mixture intended for home consumption. It is very different, however, when the goods are to be sent to other countries. Section 337 makes legal in the warehouse any admixture whatever that the merchant, mixer, or compounder may see fit to use in preparing spirits for foreign markets. This section is so important that it is quoted in full:

337. British spirits for exportation or ships' stores may have any sweetening or coloring matter or any other ingredient added to them in warehouse by a distiller or rectifier. The spirits must, except as provided for in paragraph 336, be removed into a separate room or compartment having no communication with the other part of the warehouse except by a door under Crown lock.

An important item in the regulation is that this mixing must be done in a separate compartment of the warehouse, locked off from the part where goods for home consumption are mixt.

The kinds of spirits which may be used in fortifying wine in warehouses are as follows: Foreign spirits unsweetened; British plain spirits; spirits of wine. (Paragraph 358.) Foreign spirits may have any origin whatever—that is, they may be made from grain, beet roots or molasses, potatoes, etc.

“British plain spirit” is the common name given to all spirits distilled in Great Britain or Ireland. These spirits are chiefly made from malt, as Scotch whisky; from a mixture of malt and other grain, as Irish whisky, or from Indian corn, as grain spirit or silent spirit. Spirit of wine is commercially pure, rectified alcohol.

The British regulations, as will be seen from the above abstracts, conserve carefully certain rights of the British consumer, but legalize any kind of manipulation whatever when the goods are to be sent on board ships or to foreign countries.

BOTTLING IN WAREHOUSES.

Any kind of mixt or compounded spirits may be bottled in bond for ships' stores or for exportation, and any spirits which are not inadmissible may be bottled for home consumption. (Paragraph 378.)

Spirits intended to be bottled must be removed in the presence of an officer from the warehouse into a bottling warehouse, where they may be blended and the strength reduced with water to any degree that may be required. (Paragraph 379.) For home consumption the bottles must be imperial or reputed quarts or pints. For exportation bottles of any size or quality may be used. (Paragraphs 382, 383.) In case of home consumption the officer is to see that each package is marked on the outside “Spirits,” “Whisky,” or “Compound spirits,” as the case may be (paragraph 388), but this is not required in case of exportation.

In regard to labels on bottles the British regulations give the merchant a free hand. He may use any form of label or statement he

likes, except that he must not ascribe any responsibility to the inland revenue. Paragraph 389 reads:

Officers are not to interfere with labels used on bottles or cases filled or made up in bond beyond seeing that no label or inscription contains such expressions as "Bottled in bond," "Bottled in customs (or excise) warehouse," or any other indication implying official countenance or guaranty of the correctness of the statements made.

OFFICIAL DEFINITIONS.

In order that the terms used in this résumé may be properly understood the following official definitions are given (paragraphs 18-25, 27-32, 42) :

Spirits.—All spirits whether British or foreign.

Foreign spirits.—Spirits liable to a duty of customs.

British spirits.—Spirits liable to a duty of excise.

Plain spirits.—Such as are in their original state, having had no artificial flavor communicated to them.

Spirits of wine.—Spirits of 43 per cent over proof and upward rectified from duty-paid spirits by a licensed rectifier.

Compounded spirits.—Spirits prepared by a rectifier or compounder by re-distilling duty-paid spirits with flavoring ingredients or adding to them any flavoring materials.

Liqueurs and tinctures, etc.—Compounded spirits the ingredients of which interfere with the correct action of the hydrometer. British liqueurs may be deemed to include all sweetened or otherwise obscured British compounds, including essences and perfumed spirits, of which the true strength can not be ascertained without distillation.

Sweetened spirits.—The term as applied to spirits imported in bottles means a spirit to which any matter has been added after distillation which imparts to it the quality of sweetness and procures obscuration to the amount of over 0.6 per cent.

Obscuration.—The difference, caused by matters in solution, between the true strength of spirits and that indicated by the hydrometer.

Vatting.—Putting together wines or spirits into a vat or large vessel to obtain uniformity.

Blending.—Putting together wines or spirits of similar sorts.

Mixing.—Putting together wines or spirits of different sorts.

Filling.—The making good of natural waste in casks of wines or spirits by the addition of liquor of the same or similar kind.

In the light of the above definitions it does not appear that the mixing of malt whisky, such as that described at first, with grain spirit can be justly called "blending." The two spirits are entirely of a different class, and therefore the word "blend" does not correctly designate the resulting product. The word "vatting" might be used in harmony with the definitions given, but that word would not convey any definite meaning further than the idea of mixing different liquors in a vat. The word "compounding" perhaps would, on the whole, be the best designation of the process and "compound" of the product.

The large bottling and vatting warehouses in Edinburgh, Glasgow, and London were visited and every opportunity to study the processes employed was afforded by the officials in charge. The mixing of the Scotch whisky with grain spirit is quite a general practise both for home consumption and for export. It could not be certainly ascertained that any genuine malt whisky, without admixture of grain spirit, was bottled for the United States, nor was admission gained to any bottling warehouse set aside in harmony with the regulations already given for the preparation of products solely for export. It is certain there are many such localities, but all inquiries respecting them elicited only negative answers. It is certain, however, that large quantities of bottled goods are prepared for export to the United States in the ordinary warehouses where goods are bottled for home consumption. Many packages in such warehouses address to dealers in this country were seen. Such goods are evidently bottled in such a way and contain such products as would permit them to be sold for British consumption. It is evident that under our law goods bottled in the special warehouses for export should be excluded from our ports. The law is explicit in prescribing that nothing shall be imported which is forbidden sale or restricted in sale in the country from which it comes. This difficulty, therefore, can be met by requiring a certificate before United States consuls to the effect that the goods covered by the invoice are bottled in warehouses where goods are prepared for British consumption. Any goods bottled in the special warehouses where export articles are prepared would bear *prima facie* evidence of unfitness for entry, since the only possible reason for such preparation would be that materials had been used and processes followed which rendered the article inadmissible for home consumption. It seems only fair, therefore, to require, when the inspection of British spirits is begun, that such a certificate be produced. It is doubtful if it could be obtained from the excise officers, but it certainly might be had from the compounder or merchant who conducts the preparation of the articles for export.

SUMMARY OF TRADE PRACTISES.

Briefly summarized, the present condition of the trade seems to be as follows:

(1) Practically all the pure malt whisky made in Scotland, except that for local consumption, is sold to the so-called blenders. It is mixt with varying proportions of silent spirit, colored if desired, and reduced by water to an alcoholic strength of about 45 per cent by volume. It is generally labeled as if it were unmixt malt or Scotch whisky. The average age of the malt whisky when blended appears to be about 5 years, altho there is no prohibition of the

blending of young spirits. After blending, it is stored for some time, usually a year, in order for the marriage to be complete.

(2) These whiskies are bottled in a blending or bottling warehouse in harmony with the regulations governing domestic consumption. Only such goods are really admissible in our ports.

(3) The mixing and compounding may also take place in warehouses specially provided for export work. Such goods under our law are inadmissible to the United States, because forbidden for British consumption.

(4) Irish whiskies are often prepared for export without any manipulation except coloring and reducing with water to about 45 per cent by volume. There are, however, bottling warehouses where Irish whisky is compounded in the same way as the Scotch.

(5) In the present state of the regulations it is not possible to get a certificate from the excise officials of the character of the manipulation to which the spirits have been subjected.

Officials of the boards of customs and inland revenue at London when asked whether they would furnish for each invoice of spirits and wines coming from Great Britain a certificate of origin, or, in other words, a duplicate of the papers on file showing when the spirits were distilled and to what manipulations they had since been subjected, invariably replied that under the present regulations it would be impracticable to supply the information desired.

In view of the results of this investigation, it does not seem unreasonable to expect that some change shall be made in the regulations whereby such information can be furnished. This expectation is the more reasonable, as such steps have already been taken by other nations. France is now prepared to furnish a certificate of origin for all brandies distilled in that country subsequent to 1902, and the United States, thru the Department of Agriculture, furnishes to all exporters making application therefor certificates of the character of the food products which they propose to send to foreign countries. Furthermore, spirits can be exported from the United States with a certificate showing their character, where made, when distilled, etc. Such governmental certification is as much to the interest of the reputable exporter as to the importer and consumer, since it protects the reputation and sales of high-class, established products from injury inflicted by competition with inferior, cheaper goods competing with them under the same designations.

THE ENGLISH TEST CASE RELATIVE TO SCOTCH AND IRISH WHISKIES.

Many of the conclusions stated in the preceding pages have been confirmed in the results of a trial in the North London police court begun on November 6, 1905, before Mr. E. Snow Fordham, magis-

trate, in which Mr. Thomas Samuel Wells and Mr. James Davidge, publicans, were charged with selling as Scotch and Irish whisky, respectively, mixtures of such whiskies with the "silent" or grain spirits which have been previously described. The testimony which was offered in this case was of the most interesting character, given as it was by exporters, distillers, business men, chemists, and consumers. There were naturally wide differences of opinion in respect of the various points raised by the issue, and these differences were clearly brought out in the course of the trial. The magistrate who rendered the decision in the case has summarized the more important points made in the testimony as the basis for his judgment. It is therefore not necessary to go further into the details of the testimony, but only to give the opinion of the court, which follows:

These are two summonses for contravention of section 6 of the sale of food and drugs act, 1875, selected from a number of such summonses by arrangement between the parties. It was agreed that they should be heard together.

The complaint against the defendant, Thomas Samuel Wells, is that he sold, to the prejudice of the purchaser who demanded Irish whiskey, something which was not of the nature, substance, and quality of Irish whiskey, and against the defendant, James Davidge, that he sold, to the prejudice of the purchaser who demanded Scotch whiskey, something which was not of the nature, substance, and quality of Scotch whiskey.

It was proved that on the 12th September, 1905, an agent of the inspector of nuisances of the Islington borough council asked at the public house kept by the defendant Wells, at 66 Hazelville road, Islington, for a pint of Irish whiskey. A plain bottle containing a pint of fluid was handed to the agent, who paid 2s. 4d. for it.

It was proved that on the 21st June, 1905, the same agent asked at the wine and spirit merchant's shop kept by the defendant Davidge, at 327 Hornsey road, Islington, for a bottle of Scotch whiskey. A bottle filled with fluid and bearing the label "Fine Old Scotch Whiskey" was handed to the agent, and for this he paid 2s. 6d.

Each bottle was at once handed by the agent to the inspector of nuisances, who did what is required on the purchase of a sample for analysis and subsequently a third part of each purchase was handed to Dr. Frank Litherland Teed, the analyst for the borough of Islington.

Dr. Teed analysed the samples, and after setting out the result of his analysis certified as to each sample that it "consists entirely of patent still, silent, or neutral spirit. Whiskey should contain a spirit distilled in a pot still derived from malted barley, mixed or not with unmalted barley and wheat or either of them. Such whiskey contains at least a coefficient or total of the above-mentioned impurities of 380 parts per 100,000 fluid parts of absolute alcohol. Patent still spirit contains from 89 to 204 parts of total impurities with an average of 140 parts per 100,000 fluid parts of absolute alcohol."

To be clear I will remark that the "impurities" here referred to are impurities chemically only, such as acidity, aldehydes, furfural, ethers, and higher alcohols.

The contention of the prosecution is that Irish and Scotch whiskey are different kinds of potable spirits, each made by a definite method, from definite materials, and both containing definite chemical properties. That both Irish and Scotch whiskey must be the result of distillation in Ireland or Scotland,

respectively, by the pot still derived from cereal grain indigenous to Ireland and Scotland. This cereal grain, the prosecution contends, in the case of Irish whiskey, must be chiefly malted barley to which has been added smaller quantities of barley, wheat, oats, and rye or any of them, and in the case of Scotch whiskey malted barley alone. The defendants, on the other hand, say through counsel that Irish whiskey is a spirit distilled in Ireland from grain and Scotch whiskey a spirit distilled in Scotland from grain.

Every assistance has been given to me by the advocates on both sides, who have conducted their cases admirably, a great deal of time has been given to the examination of a large number of witnesses, many of whom were men of the highest position in the science of chemistry, important members of the distilling trade, blenders of whiskey, merchants, medical men, and representatives of the public; in fact the question of the manufacture and consumption of whiskey has been thoroughly dealt with before me in the course of these cases, though I must say that I regret that Dr. Schidrowitz, who, I have reason to believe, is considered to be a very great authority on the chemistry and analysis of whiskey, and who was so frequently referred to, was not examined, though he was generally in court with the representatives of the defendants during the hearing of the cases. I must draw my own conclusions why Dr. Schidrowitz did not give evidence.

The questions I have now to decide are difficult. They are, Whether the fluid sold by the defendants, Wells and Davidge, or their servants to the agent of the inspector of nuisances of the borough of Islington were respectively Irish and Scotch whiskey.

Before I can decide this I must find what is understood in this country by the word "whiskey." Few people comparatively have, of course, ever really thought of what they mean or understand by the word, but I have tried to discover from the evidence here what people who ask for "whiskey" expect to get.

The dictionary definitions have not been seriously called in aid by either side in these cases, and at this I am not greatly surprised. After searching the dictionaries and books of reference myself all I can adopt from such authorities is that "whiskey" is "a spirit distilled from grain." As for particulars of the method of manufacture or the kind of grain it is manufactured from, where such particulars are given each book differs more or less from the others; so I really get almost no help from the books and only find a description or definition of "whiskey," that I can adopt, which is accepted by both parties to these prosecutions.

Of the many witnesses called before me, some say whiskey is the produce of the pot still only, none say it is the produce of the patent still only; some say it may be made either by the pot or by the patent still. All say it can only be made from grain, but they do not all agree as to the kind of grain.

"Whiskey," I have no doubt, is a word derived a century or so ago from the word "Usquebaugh," which signifies a spirit distilled in a form of pot still in Ireland or Scotland from grain grown, and generally malted, in Ireland or Scotland. Until some 45 years ago all that which was drunk as "whiskey" was so made. Then the patent still came into use, and it was soon found that spirit distilled in that form of still from grain grown in the country in which the still was, or abroad, might be mixed with whiskey, which cost more to produce, to the benefit of the seller of whiskey, and by degrees the proportion of patent-still spirit mixed with pot-still spirit, or whiskey, became larger and larger, until to-day there is an immense output of patent-still spirit made, with very few exceptions, from a mash composed very largely of maize; 75 per cent of maize is, I believe, not uncommon when maize is cheaper than other grain, though a great deal of foreign barley is used in the patent stills. That part of the output

of the patent still which is consumed in this country by the public is not generally sold to them alone, but mixed with more or less of pot-still spirit, and then it is sold as "whiskey."

The evidence given before me does not satisfy me that the public generally does now, or ever has, accepted the product of the patent still alone as "whiskey;" certainly not when maize is used. The evidence as to the consumption of this spirit as "whiskey" is that of Mr. McNab, who stated that the spirit made at the Glen Mavis Distillery, Bathgate, was made from all malt by the patent still. This, he said, was sold, retail, as "whiskey" in the neighbourhood of the distillery, though most of it went for mixing with the pot-still product either in Scotland or the colonies. Mr. McNab asserted that the drinkers of Glen Mavis spirit in the neighbourhood of the distillery preferred it quite new, fresh from the still; yet his firm, the owners of Glen Mavis Distillery, kept their spirit five years before it went out to the public. The reason for this apparent lockup of capital against the taste of consumers was not explained by Mr. McNab. Then, Prof. James Dewar and Dr. Tatlock have been for years drinking Cambus, a spirit made by the patent still and largely from maize. This they drank as "Scotch whiskey," but their having done so goes no way towards proving that the public have done so, because both these witnesses obtained the spirit direct from the distillery as a matter of indulgence by the maker. It was said that the Cambus spirit was sold as whiskey in one public house in Glasgow and that this fact would be proved, but no one was called to prove it. No evidence was given on which I could find that pure patent-still spirit, whether made from maize or malt, has been known among the public as "whiskey," though in the trade such spirit has been variously known as "grain," "grain-spirit whiskey," and "grains." Of Wells' sample 90 per cent was invoiced as "Patent-still spirit" by the makers to the blenders, who sold it to Wells as "Scotch whiskey," after mixing it with a very little pot-still spirit.

Though I find that the patent-still spirit alone is not "whiskey," there is evidence before me that when mixed with a considerable proportion of pot-still spirit or whiskey derived from malted barley such mixture has long been sold to and accepted by the public in immense and increasing quantities as "whiskey." Indeed many of the most largely advertised and popular makes of potable spirits are of this character, and contain, I have reason to believe, a very considerable proportion of pot-still whiskey. Whether I should hold such mixture to be "whiskey" or not I am not called upon to say and I express no opinion as to that.

The descriptions "Irish" and "Scotch" as applied to whiskey are commonly understood, I think, to indicate something more than the place of origin of the whiskey. The words "Irish" and "Scotch" are used to mean a particular kind of whiskey, made in a particular way from particular material in a particular place. The term "Irish whiskey" is used to denote whiskey made by Irish methods from materials used in such methods in Ireland, and the term "Scotch whiskey," to denote whiskey made by Scotch methods from materials used in such methods in Scotland. Irish whiskey and Scotch whiskey are just as much definite articles as are Bourbon whiskey or Canadian whiskey.

In both Ireland and Scotland from earliest times the national alcoholic beverage, "Usquebaugh," now whiskey, has been distilled by pot stills. It certainly was so made when it was first known as "Irish whiskey" and "Scotch whiskey," and I must hold that to be "Irish" and "Scotch whiskey" now the spirit must be obtained in the same methods by the aid of the form of still known as the pot still. The produce of the patent still, unmixed with pot-still whiskey, can not be Irish or Scotch whiskey, although made in Ireland or Scotland; the patent still is not used to obtain spirit by the method known as

Irish and Scotch. As to the material to be used to produce Irish or Scotch whiskey, it must be such as has been always used in the Irish and Scotch form of still commonly. This, I find from the evidence I have heard is, in Irish whiskey, barley malt, as to about 75 per cent and, as to the rest of the mash, barley, wheat, oats, and rye, or any of them; and in Scotch whiskey it is wholly barley malt. There is a distinct difference in the material used to produce Irish and Scotch whiskey in the pot still, but the material used to produce spirit in the patent still is the same whether it be produced in Ireland or in Scotland. Maize has never been commonly used in pot-still distillation; indeed it was sworn to in the course of the hearing of these cases that maize is used in the pot still in only three distilleries at all, two of which certainly are owned by owners of patent stills, and I do not find that the spirit distilled from maize in these three pot stills is taken alone by the public as Irish or Scotch whiskey. I find that maize, not having been commonly used in the pot still, or Irish or Scotch method of making whiskey, can not be material from which Irish or Scotch whiskey is derived.

Between the flavour and smell of Irish whiskey and Scotch whiskey there is a distinct difference. The flavour and smell of Irish whiskey is generally attributed to the rye used in its manufacture, and the flavour of Scotch whiskey—of old-fashioned character—called its “reek” is generally thought to be traceable to the system of malting over a peat fire, and where Scotch whiskey “reeks” of the peat it is said to “have a peat reek;” but in no instance, whether it has a peat reek or not, does Scotch whiskey give the same flavour as Irish whiskey, the two kinds are easily distinguishable. Again pot-still whiskey made of the material used in Ireland or in Scotland, it is agreed to by all parties, is a distinct and different article from the patent still product wherever that may be made, distinct and different in its flavour and smell. This difference, I believe, arises mainly from the difference in the method of distillation, from the difference in the working of the machine, and the still used. However that may be, while Irish and Scotch whiskey are clearly distinguishable from one another, the product of the patent still made in Ireland is not to be distinguished from that made in Scotland or even in London; therefore if the spirit produced by the patent still is to be recognized as Irish or Scotch whiskey according to the place where it is made, the terms Irish and Scotch as applied to whiskey cease to have any meaning.

Now as to what the fluids sold as Irish and Scotch whiskey by the defendants Wells and Davidge, respectively, were, I had the evidence of Dr. Teed, an analyst of great experience, and of the accuracy of whose analysis Prof. James Dewar, a most eminent chemist, had no doubt whatever. Dr. Teed, drawing his conclusions from the result of his analysis of the samples, is of opinion that the spirit is the product of the distillation of some grain, he can not say of what kind, in the patent still. He arrived at his opinion because after analysing many pot-still whiskies from different distilleries and of various ages, Dr. Teed was satisfied that it was reasonable to conclude that pot-still whiskey contains at least 380 parts in 100,000 fluid parts of absolute alcohol, of “impurities” (scientifically so called); while patent still spirit, he found, did not contain anything like so large a proportion of such “impurities.” Dr. Teed was vehemently attacked and ridiculed by the leading counsel for the defence—Mr. Fletcher Moulton (now Lord Justice Moulton)—for taking such a basis on which to found his opinion, and I am surprised, now that I have heard the chemists called by the defence, that such an attack should have been made on Dr. Teed, for Prof. James Dewar could not contradict Dr. Teed, though he was unable to corroborate him in his opinion that the figures obtained by Dr. Teed in his analysis of the samples warranted Dr. Teed’s conclusions from them.

that the samples were of patent still produce entirely; but Prof. James Dewar's evidence, taken as a whole, amounted to the admission that he understood from Dr. Teed's figures, which Prof. James Dewar accepted as accurate, that the samples giving those figures were from the patent still as to 80 or 90 per cent. Dr. Tunnicliffe, too, gave evidence and produced figures and analyses confirming to a considerable extent Dr. Teed's opinions and conclusions from his analyses. I intentionally make no reference to the evidence given by Dr. Tatlock as an expert witness. Now Prof. James Dewar and Dr. Tunnicliffe did not contradict Dr. Teed, and if Dr. Schidrowitz could have done so I have no doubt he would have been put into the witness box, as he was in court, but he was not called. In addition to what I may call the professional evidence of Prof. James Dewar and of Dr. Tunnicliffe the defence called the blenders of the spirit sold by the defendants, and the makers of 90 per cent of it; and their evidence, if I accepted it without reservation, and I do not so accept it, proves that Dr. Teed was not far wrong in his conclusions as to the origin and manufacture of the articles as to which he certified. I am not satisfied that Dr. Teed was at all wrong. The men who actually handled the spirit sold by the defendants before it was sold to them say that Wells's sample and Davidge's were largely 90 per cent of patent-still spirit. In each case the spirit was derived largely from maize. The rest of the spirit sold to and by Wells and Davidge besides the 90 per cent was said to be pot-still whiskey and made from barley malt.

On the evidence I heard I find that what Wells and Davidge sold as Irish and Scotch whiskey, respectively, was patent still spirit made largely from maize, to which had been added a dash, not 10 per cent, of Irish or Scotch whiskey. The quantity of whiskey added to the patent still spirit was so small that I can not understand why it was added, unless it was to "save the face" of those who described it as whiskey.

It was admitted by the defence that both the Wells and the Davidge article was a very cheap, poor "whiskey," as it was called by the defence; and it is interesting to observe by the light of the evidence that both pot still and patent still spirit greatly improves with age, that at least 90 per cent of Wells' spirit was only one month old when put into Wells' cellar in May, and so less than six months old when sold by him in September, while what Davidge sold in June, 1905, as "fine old Scotch whiskey" was, as to about 90 per cent of it, made in June, 1904, just one year before.

Now, having found that the fluids sold by the defendants are spirit produced by the patent still from a mash consisting to a large extent of maize, to which a dash of whiskey made from barley malt in a pot still had been added, I find in my judgment that Wells' sample is not Irish whiskey and Davidge's sample is not Scotch whiskey, and Irish whiskey and Scotch whiskey having been demanded by the purchaser from Wells and Davidge, respectively, I find that each of the defendants did sell an article of food which was not of the nature, substance, and quality demanded.

Let me now consider whether what the defendants did was to the prejudice of the purchaser. The purchaser asked for and paid for Irish whiskey and Scotch whiskey, either of which costs more to make and as an article of commerce is of far greater value than the patent still spirit with a dash of whiskey in it which was delivered to him. He asked and paid for an article worth twice as much as the article he got. I have no doubt that the medicinal value of Irish or Scotch whiskey, with their larger proportion of so-called "impurities," is greater than that of spirit from the patent still which does not contain "impurities" in nearly so large a proportion. Irish and Scotch whiskey, on the one hand, and patent still spirit with a little whiskey added, on the other hand, are two very different articles. They differ in their contents, in their flavours,

and in their scents. No average man could by taste or smell mistake one for the other; and after drinking both Irish and Scotch whiskey and pure patent still spirit, as represented by "Cambus," neat as well as diluted, I am strongly inclined to agree with the witnesses who said that the effect of the pure patent still spirit on the person taking it was different from the effect of Irish or Scotch whiskey when drunk by him, and this to the disadvantage of the pure patent still spirit.

I am not prepared to say that patent still spirit alone or mixed with whiskey is injurious to the drinkers. There is no accounting for tastes and the preference of one man should not dictate the choice of another; but whatever a purchaser asks for and pays for should be given to him by the seller, or at any rate the seller should afford the purchaser the means of knowing what it is he is getting for his money—certainly if he is not getting that for which he has asked and has paid.

It is not unlawful to sell patent still spirit or patent still spirit mixed with whiskey; but notice should be given to the purchaser of what it is when such spirit is sold to him, and on being served with it he should not be allowed, in his ignorance, to believe that what he has is Irish or Scotch whiskey.

I find the sales in these cases by the defendants were both to the prejudice of the purchaser.

Having come to these conclusions, I find that both Wells and Davidge have infringed the law, and I must fix and order penalties on each of these two summonses.

The offence committed by both defendants is the same, and the same practically in degree. Therefore I think the penalty in each case must be the same.

The misrepresentation with regard to Irish and Scotch whiskey has become very usual, and its adulteration by the addition to it of patent still spirit, made largely from maize, has been gradually increasing for years, and the result has been taken by the unsuspecting public to the benefit of the distillers, dealers, and retailers until the so-called "blenders" have dared to concoct and place upon the market and sell to the retailers raw new patent still spirit with a mere dash of Irish or Scotch whiskey in it as "Irish whiskey" and "Scotch whiskey." The retailer has, in fact, sold this effort of adulteration to the public under the description by which it was sold to him.

It is time the fraud upon the public in the matter of the sale of whiskey was stopped, and, though doubtless these prosecutions are very costly to those who engage in them, the information obtained and published in the course of the hearing of these two summonses is most valuable, and the result of this trial seems to me to afford ample justification for the prosecutions.

Great blame attaches, in my opinion, to the "blenders" who supplied Wells and Davidge with the articles they sold. I do not think much moral blame attaches to the defendants themselves, as I believe they trusted to those who sold the articles to them to supply them with that which they might fairly and honestly retail to the public as Irish and as Scotch whiskey, respectively; but at the same time, in my judgment, it was careless of the defendants to sell what they did as they did, and since they only are before me they must pay the penalty for their infringement of the law.

The costs incurred by the prosecution in putting these cases before the court are of course, very heavy, and, considering the position of the defendants, I can not order them to pay more than what must be a small part of the actual costs incurred. While I regret that the prosecutors should be anything out of pocket in bringing the matter before the court and so to public notice, as the

costs to be paid by the defendants must be heavy as costs upon them, I shall impose but small nominal fines. The defendants, Thomas Samuel Wells and James Davidge, will each pay a fine of 20s. and 100 pounds costs or be imprisoned in default of distress for two months in the second division.

An appeal was taken from this decision to the upper court, and the lower court was sustained by a tie vote. A further appeal has been made, and is now pending, in order to obtain a decisive opinion of a higher court.

GERMAN WINES.

METHOD OF MANUFACTURE.

The investigation of German wines, methods of manufacture, warehousing, fining, and bottling embraced the four principal wine-producing regions of the Empire, viz, the Rhine, the Moselle, the Pfalz, and the Nahe.

The German vineyards, owing to climatic conditions and their far northern position, do not produce a grape very rich in sugar. Many of the natural small wines, especially on the lower Rhine and the Moselle, do not contain much in excess of 6 or 7 per cent of alcohol. In all these regions the Riesling is the principal variety of vine cultivated, and nearly the whole product is white wine. The method of manufacture is simple, and the wine is made very largely even yet by the small growers producing only a few hogsheads. There are many large wine houses, however, for the larger vineyards, which often utilize also the grapes from near-by smaller vineyards. The grapes for making white wines are uniformly prest and the exprest juice subjected to fermentation, while in the manufacture of red wines the crusht grapes are subjected to fermentation and the wine afterwards exprest. In this way the alcohol produced denotes the red coloring matter of the red grapes from which this variety of wine is made. This coloring matter is not soluble in the unfermented juice of the grape. After the first fermentation is over the wine is put into casks. Each cask on the Rhine holds about 1,200 liters and is called a *stück*, while on the Moselle it holds 1,000 liters and is called a *fuder*. Before filling, a piece of sulfur match is burned in each cask for the double purpose of sterilization and of keeping the wine properly bleached. During the first year the casks are racked three or four times to separate the wine from the sediment (lees), and at each racking sulfur is burned as at first. After the first year the rackings are less numerous. Finally, before bottling, fining material, usually gelatin or white of egg, is added, and when this has entirely subsided the wine is clear and bright and ready for bottling.

CLASSIFICATION.

Much confusion exists in Germany in regard to the classification of wines. In England practically all the Rhine wines are known as hock, and the rest of them as Moselle. The wines of the Pfalz, the Nahe, and other regions are almost unknown in the United States under these designations. It is quite a common practise also to give the name of the most famous locality to the wines of that neighborhood, as, for instance, Johannisberg, Rüdesheim, etc., to the wines not only of those particular vineyards, but also to the wines of the neighborhood. The broad claim has been made that wines of a certain type, no matter how far the vineyards may be removed, may bear the name of a distant locality. This practise, however, has been declared by the German higher court to be inadmissible. According to that decision only names of wines which no longer indicate a locality, but rather a regional quality, can be used in this general sense. The vineyard areas in Germany have not been mapped, nor have the wines been classified, as in France. The attention of the growers and merchants was called to the great importance of agreeing among themselves both as to the limits of certain definite areas and the names which classed wines should bear. It is evidently unfair to the consumer, as well as to the owner of a high-class vineyard, that other wines, even tho excellent, should bear the name of the locality famous for its wines. It is, however, hardly possible that each small town or vineyard should furnish a separate name to each wine produced therein. The desirable thing is to protect the name of the well-known vineyard and see to it that no wine not produced therein should bear its name. The other wines might either be designated by the locality or town where made, or, better, by the regional name alone, as Rhine wine, Moselle wine, Pfalzer wine, etc.

It is well known that these names are used, unfortunately, without much discrimination, and the great bulk of the German wines entering the United States in bottles bear the names Rüdesheimer, Johannisberg, Liebfrauenmilch, Marcobrunner, Berncastler Doctor, Zeltinger, Hochheimer, etc. It is high time this practise should be corrected, and no person or persons can do this so effectually as the German growers and merchants themselves. It is well known that often small portions, only a few hundred square feet, of a former vineyard may be owned by a merchant who thereupon may claim that he has vineyards in such and such places, and sells wine made in his own vineyards. So, indeed, he does, but only in infinitesimal quantities. No wine should be admitted into our ports which bears any name giving a false indication of origin, either as to country, district, or particular locality. It would be perfectly within our

rights of inspection to require a certificate of origin where such wines are used. There is very much to be desired in this direction. The reform may be instigated by the requirements of our inspection, but it must come from the growers and merchants themselves in order to be effective.

SUGARED WINES.

The German law permits the addition of sugar to must before fermentation under certain restrictions, namely, that the extracts or solids in the wine be not reduced below a certain mean value. The text of the law in this respect is as follows:

The addition of the following substances shall not be regarded as an adulteration or imitation of wine in the sense of the law relating to commerce in foodstuffs, namely: The addition of technically pure cane, beet, or invert sugar, of technically pure starch sugar, in aqueous solution, in so far as such an addition is practised for the improvement of the wine, without notably increasing its quantity. Moreover, the sugared wine in its properties and its composition, and also in its content of extract and mineral components, shall not be reduced below the mean composition of the unsugared wines of the neighboring vineyards to the product of which the wine corresponds in its name.

The German law also permits the addition of alcohol for the purpose of preserving the wine, provided the quantity of the added alcohol, except in such beverages as a dessert wine or a sweet wine of foreign origin, shall not exceed more than 1 volume to 100 volumes of the wine.

It is evident from the provisions of the law just quoted that the sugaring of wine is intended only to be practised in such cases as require some artificial help for a poor, immature, or imperfect grape. Yet each wine maker is left to judge for himself as to the necessity of using sugar, and the temptation to use it just in so far as it will prove profitable will lead to great abuses. No objection can be made to the use of sugar to secure a potable beverage from a raw material which, without this aid, would yield only a sour, acrid, and undrinkable article, but it does not seem just that such an artificial product should have all the rights and privileges of a genuine wine. The fault of the German law is not in authorizing the use of sugar, but in securing a wrongful designation for the product. If the sugared wine were required to bear some qualifying name to distinguish it from the genuine wine, no reasonable objection could be made to its manufacture; but emphatically such is not the case. The wine made partly from sugar, perhaps in some cases furnishing 25 per cent or more of its alcoholic strength, is admitted to the same standing in commerce and before the law as the wine made solely from the juice of the grape. This is not fair to the consumer, nor is it fair to the maker of the real wine. Yet when it was proposed to

the German makers and merchants to designate such a wine, when shipped to the United States, by a name in harmony with our standards for such a wine an emphatic protest was made. There was no exception to this rule. This point was discussed with everyone interviewed, and all exhibited a most determined opposition to any appellation which would disclose the true nature of the product. This opposition was based on the assumption that a product thus properly marked could not be sold in the United States. When asked if they thought it was right to deceive the American customer the answer was that it was in strict harmony with the German law, and if the German consumer was satisfied the American ought to be. When asked if the German consumer would buy the wine if he knew it were made largely from a foreign body, the answer was "No," showing that not only the American but also the German wine drinker is deceived. The writer, however, does not believe that a correct marking of the product would destroy its sale. It would only prevent this product from an unfair competition with the genuine article, but would not prevent its sale at a reduced price.

Often the wine merchants themselves do not know just what wines in their cellars have been made with the addition of sugar, but this is not always the case. It would not be difficult, however, for the merchants to find out at the time of purchase which wines had been sugared. A simple marking of the casks and a little care in the blending would enable them in all cases to declare whether the wines of any invoice intended for export had been made partly from sugar.

This is one of the most important questions connected with the future inspection of German wines. Under the provisions of the law and of the standards established thereunder it seems imperative that such wines should bear a distinguishing label. If this be required, however, emphatic protests will be registered by all the German exporters. Many of them will be unable to trace the sugared wines which have passed through their cellars, and a considerable restriction in trade will ensue. This restriction, however, will in the end be productive of good results for both the American consumer and the German merchant. For just as soon as a people are certain that they are getting genuine articles, trade in those articles increases. On the contrary, trade in adulterated or debased articles always reacts injuriously on the genuine product. The simplest solution of the whole matter is found in the fact that it is a misdemeanor under the German law to supply a sugared wine when a natural wine is demanded. Our importers, therefore, in giving their orders need only to require that a natural wine be furnished. However, there could be no possible objection to the importation and sale of a sugared wine under a correct appellation.

CONCLUSIONS.

It appears that, aside from the use of sugar in the manufacture of wine as above noted, there is little fear of sophistication in imported German wines. It is true that many convictions have been secured in Germany for adulterating wine in other ways, and there is no reason to suppose that such adulterated wine may not find its way to our ports. The necessity for a rigid inspection is therefore urgent, but this inspection would naturally be directed to invoices from firms whose standing in the commercial world is unknown or not well established. Fortunately the Germans are quite sparing in the use of sulfur in racking their wines, and it is rarely the case that a quantity in excess of that allowed by our provisional standards is found.

To summarize briefly: Two important points are to be considered in connection with imported German wines—

(a) Correctness of name.

(b) Purity of product; that is, whether it be the pure juice of the grape properly fermented.

To require that imported wines conform to reasonable standards in these particulars will result in securing the pure and properly named product and thus tend to increase the consumption of these justly celebrated products of German vineyards.

FRENCH WINES AND BRANDIES.

BORDEAUX WINES.

GENERAL DISCUSSION.

Bordeaux may justly be considered the wine center of France, altho there are many other large areas of the country where great quantities of wine are produced. The wines of the Gironde are of many qualities, but are broadly divided into two great classes—the white and the red wines. Each of these divisions may include what are known as classed wines (that is, wines recognized by usage and by law as possessing distinct qualities) or common wines (to which no distinct quality or value is assigned by law or custom). The classed wines are divided into a number of classes, as first, second, third, fourth, fifth, and sixth growths, etc.

The great wine merchants of Bordeaux either have vineyards of their own or purchase the wines directly from the vineyards at auction or in private sale, usually transacting their business thru brokers who are experts in judging the quality of wines. Often the classed wines, or château wines, after purchase are left in the château

cellars until they are ready for bottling or sale. At other times these classed or *château* wines are brought at once to the cellars in Bordeaux, where they are ripened and prepared for bottling and sale. The wine usually comes in *barriques* holding about 225 liters. New and light wines intended for rapid development and for sale at a low price are often kept in rooms above ground or in cellars only slightly deprest, where the greater heat of summer accelerates the ripening. The better and more costly wines are stored in subcellars, where it is cooler and more even and where there is little change in the temperature between summer and winter, and where, as a rule, the air is very moist.

Wines are purchased mostly in the spring following the vintage. The maker of the wine conducts the first fermentation and gives the new wine at least one racking before sale to the large merchants. After the wines are received from the maker and stored in the cellars they are racked from three to five times the first year. The racking is accomplished by inserting a faucet in the end of the *barrique* just above the level of the deposit. The clear wine is drawn off thru this faucet until all has run out that can be secured. The other end of the cask is then raised and the wine allowed to flow slowly, while it is closely watched until it shows turbidity. The lees from various *barriques* are collected and allowed to settle, when more clear wine is secured. The empty *barriques* are washt with cold water, a chain usually being inserted to assist in the detaching of any solid matter from the sides of the staves. After drawing off the wash water a piece of sulfur candle, approximately 20 to 50 grams in weight, is burned in the moist barrel, and after this is done the bung is inserted, the barrel being full of sulfur fumes. The cask is then set aside until it is used again. If the cask be not used for a long time, the washing and burning of the sulfur therein is repeated. This is done usually about each week in order to keep the casks moist and free from fermentation. In treating white wines about one-half more sulfur is used than in the treatment of red wines. The fining of the wines is done mostly with whites of eggs. The whites of from five to ten eggs are used for each *barrique*.

Cheap, light wines are often bottled after being stored in the cellar for a year, but the usual time is about eighteen months. A wine is considered ripe for bottling when, after fining, it does not become cloudy on standing. The finer and higher-priced wines are often kept for three, four, or even five years in wood before bottling. For the best wines the bottling is done from each *barrique* separately; in the case of cheap wines they are often poured into large vats and mixt together before bottling in order to get a uniform quality.

The wines from the same vineyards differ greatly in quality in different years. For instance, in the Bordeaux region the wines of 1900 were good, and also those of 1904. The wines for 1901, 1902, and 1903 were poor wines, especially for 1902 and 1903. Poor château wines, such as those made in 1902 and 1903, are not sold under château names, but rather under the name of the district or as a common wine—for instance, as Médoc, Sauterne, or Graves. It is possible, also, that fine district wines—that is, common wines—may be sold under the name of a château, and the character of the dealer must be a guaranty in many cases that a fraud of this kind is not practised.

The methods of making wine in the Bordeaux district are still extremely primitive in most cases, altho some wineries have modern improvements. Even the cooper shops are all carried on in the same way—by hand—as they were one hundred years ago. The head of one of the leading firms said in regard to the old-fashioned way in which his coopers worked: "I might as well try to bring a king to the throne of France as to get these workmen to adopt modern methods."

Much of the wine when it is properly refined is sold to other dealers in the cask. A great deal of it is also bottled by the Bordeaux bottlers. Wine generally improves after bottling, for a limited time.

By request of the merchants and others in Bordeaux a conference with Professor Gayon, of the University of Bordeaux, and a member of the national wine committee of France, was held, at which the following propositions were discussed:

(1) What amount of sulfurous acid should be permitted in the sulfuring of wines?

Professor Gayon contended that the conclusions of the national wine committee of France—namely, a maximum limit of 400 mg per liter, with a tolerance of 10 per cent—should be conceded by the authorities in the United States. To this proposition reply was made that in the data which had been used by the national French committee as a basis for forming a conclusion only 3 samples out of the 263 examined by that committee were found to contain sulfurous acid in excess of 400 mg per liter. The standard fixed by the French committee was, therefore, not a logical one, since with the per cent of tolerance provided it included every sample examined. It seems fair to presume that if the committee had found samples containing 800 mg of sulfurous acid per liter it would have made that a standard instead of the 400 actually found. It was not reasonable, therefore, that the American authorities should be asked to adopt a standard evidently intended to cover even the maximum quantities of sulfurous acid found in wines; evidently they should adopt one that would exclude the excessive quantities of sulfurous acid in perhaps 10 or 15 per cent of the total number of samples examined. This would

lead to a logical standard for a maximum of sulfurous acid of not over 350 mg per liter.

(2) Is a sliding standard for sugar in the wine a desirable one—namely, say 200 mg per liter for dry wine, rising to 350 mg per liter for sweet wines?

To this proposition Professor Gayon replied: "No; because sulfurous acid is added not merely to preserve the sugar, but also to counteract the effect of the oxydases, which would tend, if not checked in their activity, to cause the wine to become brown." He said further that under the influence of the oxydases (the botrytis) the sugar in the must might reach as high as 60 per cent. To this statement it was replied that such grapes should be classed with raisins rather than with fresh grapes, and the use of raisins in wine making was commonly prohibited in France.

After an extended discussion of this subject it was found that it was not possible for Professor Gayon and the writer to reach any common ground of agreement. The only concession that Professor Gayon would make on the part of his associates of the national committee was that he would urge upon them the desirability of reducing the standard to 350 mg of sulfurous acid per liter for all wines made after such an agreement was reached, provided the United States authorities would raise the limit to 400 mg of sulfurous acid per liter for all wines already made, which proposition was taken under advisement. A prominent Bordeaux wine merchant, however, stated that he would be glad if the use of sulfur could be in some way diminished or even eliminated, and that in his own establishment he intended to limit its use to the smallest possible quantity.

It was often remarked during the conference that the standards applied by the United States to foreign importations were not applied to wines produced in California, nor to dried fruits as prepared in the United States. In reply to this it could only be said that this condition was due to the peculiarity of our institutions, which prohibits the enactment by Congress of any legislation which would infringe on the police powers of the several States, and that the only way, under existing laws, that the matter could be reached at all by the Federal Government was by interstate-commerce regulations concerning impure and adulterated foods.^a

In speaking to one of the merchants respecting a large number of cases of white wine which contained an excess of sulfur, and could not, therefore, be sent to the United States, it was asked: "Why do you not sell these wines, which you say are of very high quality, to the home market?" to which he replied: "As far as I am concerned there

^a On June 30, 1906, subsequent to this interview, the national food and drugs act became a law, thus eliminating this criticism.

is no market in France for high-priced wines. My chief market is the United States."

At a large meeting of the merchants the writer endeavored to impress them with the fact that the sole object of the inspection was to promote fair and honest commercial conditions, equally to the interests of consumer and producer, and that the purpose of studying the wines of the Gironde—their manufacture, handling, storing, and bottling—was to reach such just conclusions concerning them as to make their inspection at the ports of the United States thoroly just.

THE WHITE WINES OF GRAVES AND SAUTERNAIS.

A visit to the principal white-wine regions of the Graves and Sauternais was one of great interest. The more important classed vineyards were visited, such as Château Yquem and Château La Tour-Blanche.

In the making of white wines three classes of product are produced during the vintage. At the first of the vintage the grapes are not fully matured, and the product is known as "la queue." During the middle part of the vintage the grapes are much better and the product is called "la centre." The end of the vintage finds the grapes in the best state for making the highest grade wines, owing to their ripeness, evaporation, and consequent increase in content of sugar. This product is called "la tête." The three parts of the vintage are fermented in separate casks, and when the fermentation is over an expert examines each cask separately. All the casks in which the fermentation has gone wrong are eliminated for sale as common wine. All the sound products of the three parts of the vintage are then blended together to make one château wine.

The attention which is given to the grapevines at Château Yquem is worthy of mention. Each vine is cared for as carefully as the finest horse or cow would be. The vineyards are on the top of a gentle incline from the river, about 3 miles away. The soil is gravelly and level or gently rolling. All the work in the winery is done by hand. Even the wine presses are worked by hand power. The grapes in this vineyard, under the combined influence of sunshine, degree of ripeness, and botrytis, grow very rich in sugar, making a wine which after fermentation contains sometimes as much as 8 per cent of unfermented sugar. Such a wine is more a liqueur than a wine and is highly prized as a great luxury and sold at great prices. The fermentation takes place in hogsheads and never in large vats, as in the case of making red wine. All the wines are ripened and bottled at the château, and no label is ever given out to any bottler anywhere. Any wine claiming to be a Château Yquem which is not bottled at the château is fraudulent.

The Château Yquem vineyard contains about 200 acres in vines. The wines are generally sold soon after they are made, but left in the cellars to ripen and bottle. The vintages differ greatly from year to year at this château, both in quantity and quality. Some years the wines are so poor that they are sold simply as Sauternes, without the name of the château. This shows that the soil has very little to do with the annual variations in the quality of the wine, for it remains a constant factor. The dominating factors as producers of quality are rainfall, sunshine, heat, and frost. The botrytis—a sort of fungus rot—is much valued, since it increases the quantity of sugar in the grapes by producing withering and evaporation. The Haut Sauternes are all grown in a very limited district, which, by reason of its peculiar elevation, exposure, and soil produces a character of grape suitable for the making of a white wine in which much unfermented sugar remains.

The Graves district lies between the Sauternais and Bordeaux, and makes a white wine of a dry character and very highly prized.

THE RED WINES OF THE MÉDOC.

A trip thru the Médoc, or red-wine district, was of great interest. Some of the most famous red-wine vineyards were visited, such as Château Lafitte, Château La Tour, Château St. Estèphe, Château Léoville-Poyferré, Château La Rose, Château Margaux, and others. The cellars in the red-wine district are perhaps the finest in Europe. The vines in all the great vineyards are beautifully kept. It is estimated that it costs about 750 francs to bring the fruitage from an acre of a first-class vineyard to the wine press.

The red wines of the Médoc are all made in practically the same manner. The grapes are rubbed thru a sieve or past thru a stripping machine to free them from the greater part of the stems. In this partly crusht state they go into the fermentation vats, being tramped on by the bare feet of the workmen, to the sound of the fiddle. As the juice ferments the skins and short stems, freed from their juice by fermentation, rise to the surface. After the fermentation is practically complete the wine is drawn into casks, the pomace prest, the first pressing added to the wine and the heavy after pressing made into wine for use of the laborers.

In the refining of red wine it is not racked as often as the white wine is, nor is the quantity of sulfur used nearly so great. The vintage begins in the Médoc about the end of September. The wines are divided into three parts, as in the case of the white wines, namely, "la queue," "la centre," and "la tête," the sound wines of the three portions being united to form the vintage wine.

COGNAC BRANDIES.

Dr. George H. Jackson, United States consul at La Rochelle, assisted in the inspection of the Cognac brandy regions. The greatest courtesies were extended by the merchants and manufacturers in Cognac, all of whom placed every facility possible at our disposal for the investigation.

Only brandies made from the wines grown in the departments of the Charente, of which region Cognac is the center, are allowed to bear the name "Cognac." The wines are made almost entirely from white grapes, which are not extremely rich in sugar. As soon as the vintage is well over and the first fermentations of the wines are finished the distillation is begun. It is found that a much better brandy is made by distilling the new wine and allowing the brandy to mature several years in wood than by maturing the wine in wood before distillation. All the stills used in the Cognac region are small, made of copper, and hold only from 15 to 25 hectoliters.^a Experience has shown that larger stills do not make a brandy of the quality produced in the smaller stills, and also that the use of chambered or patent stills produces a brandy of very inferior quality, if it be entitled to the name of brandy at all. The stills are arranged en batterie, sometimes a dozen or more being placed in a single row. The first distillation in a pot still produces low wines, approximately of 30° strength. These low wines are subjected to a second distillation in a pot still, which brings the alcoholic content up to 60 per cent or more. The brandy is generally placed in new casks made of oak wood and put into warehouses, where it is allowed to age. The brandies do not begin to be good until they are about 4 years old, and improve up to 15 or 20 years. Under the new law the warehouses are under the control of the Government, which sees that the products are properly distilled and stored and not tampered with while in the warehouses. The Government thus is able to give a certificate of origin for brandies which are exported. This law has now been in force only two years, and hence the brandies with which a certificate of origin can be had are all young brandies.

The center of the champagne region is at the village of Segonzac, near Cognac, and this region produces the highest grade of brandy made, known as "Grande fine champagne." The region bordering on this and also definitely mapped by authority or common consent produces an excellent brandy known as "Fine champagne." Next to this is another region, definitely mapped out, producing a brandy known as "Petite champagne." Next to this and extending entirely around it is a region known as the Borderies, which gives its name

^a One hectoliter=26.4 gallons.

to the next grade. Still external to this is another region known as "Fine bois," which makes a brandy of slightly lower quality, and then outside of all this a region extending to the borders of the Charente in many places and producing a brandy known as "Bois commune."

A more detailed description of the distillation will be of interest:

The stills are of copper, small, holding only from 15 to 25 hectoliters, usually heated directly by fire, tho a few heated by a steam jacket were seen. The neck goes either directly to the worm, or passes thru a wine heater (*chaudvin*), which contains the charge of wine next to be distilled. The wine thus acts as a partial condenser for the brandy, and by becoming very hot effects an economy of fuel. The distillate is divided much as in the case of whisky, especially in the second distillation. The first distillate is not of sufficient strength for storage and it is subjected to a second treatment, as in the case of whisky. The second distillate is sent over until the mixt product has from 64 to 68 per cent alcohol by volume. The remainder is distilled into the tank for the original first distillate and mixt therewith for further concentration. The lees are drawn off into a shallow, cement vat, usually outside of the distillery, where they are mixt with lime and treated for the production of tartaric acid. In some cases the lees are mixt with industrial alcohol (potato, beet root, beet-root molasses, etc.) and redistilled to give a flavor of brandy to the product. This practise is now forbidden by law.

The varieties of vines used chiefly for the production of the wine from which the brandy is made are Lafolle Blanche and St. Emilion. Nearly all the vines have been replaced by American roots since the destruction of the original vineyards by the phylloxera. The soil is chalky, full of pebbles, and not at all fertile thru the whole region. It is interesting to know that in the very low part of the country, subject to overflow, the vines escaped destruction from the phylloxera and are still on their original stalks. Some of these vines are said to be at least 100 years old. These old vineyards are planted somewhat irregularly in rows at least 2 meters apart and the vines have no support except their own sturdy and gnarled trunks, which are cut back to a height of from 18 to 20 inches. The new growth is allowed to extend along the surface of the soil. These old vineyards, therefore, have a very ragged appearance when compared with those of recent date. It is also stated that they yield a much smaller product, but it is supposed to be of a higher value.

Formerly a variety of still, as already mentioned, was used in the Cognac country, known as a peripatetic still, which was drawn around from vineyard to vineyard for the purpose of distilling the wines of

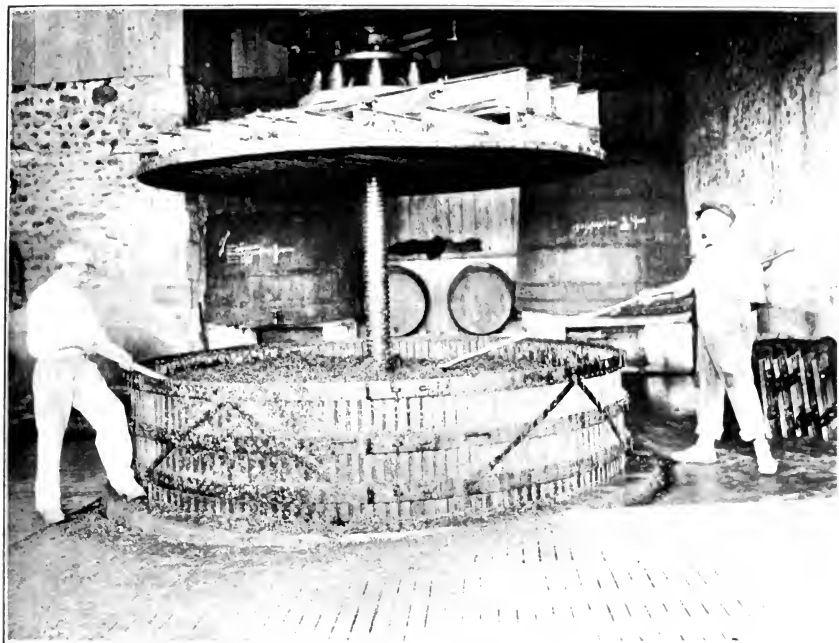


FIG. 1.—WINE PRESS IN OPERATION, COGNAC.

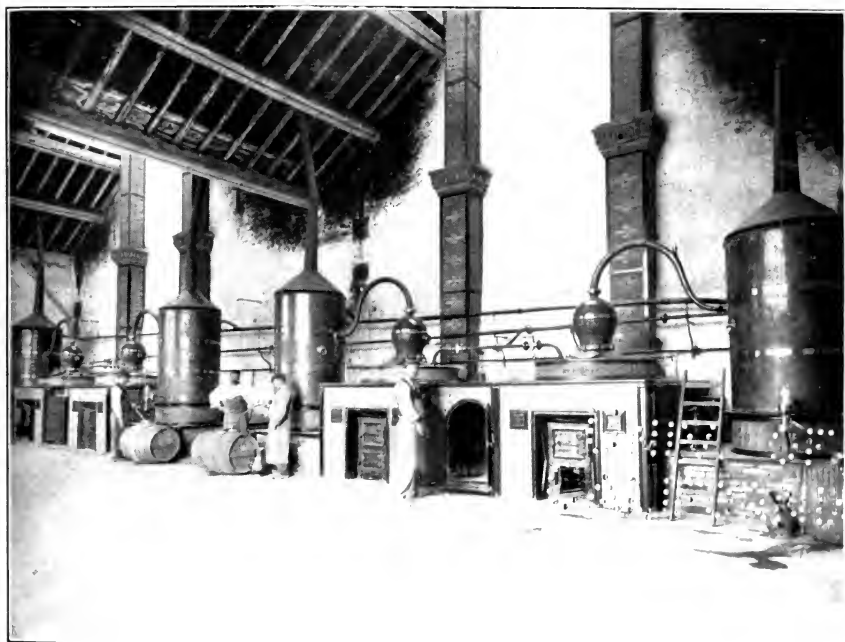


FIG. 2.—A COGNAC BRANDY DISTILLERY.

(continued)

the proprietors, much as a thrashing machine is drawn in this country.

A great deal of wine is distilled in the south of France and some in the Charente, not for the purpose of making brandy, but for making a grape spirit, which is sent north for the purpose of fortifying champagne.

As ascertained from the inspection, it is possible at the present time for American merchants to get true brandy—that is, the whole distillate from the wine—if purchased directly from the warehouses under a Government certificate. When these brandies are sold and pass thru various hands there is no assurance that they are not mixt, stretched, and adulterated before reaching our markets.

EXECUTION OF THE IMPORTED FOOD LAW.

FRENCH CANNED VEGETABLES.

The methods of preparing canned vegetables for export to the United States were carefully studied, with special reference to the use of sulfate of copper for greening peas, beans, etc. Factories were inspected and methods of manipulation observed. Since the inauguration of the food inspection in the United States greater care has been exercised respecting the amount of copper sulfate used. The quantities employed are now carefully weighed, and the water in which it is dissolved is measured in order to avoid the excessive use of this objectionable material, which heretofore has been so commonly practised. A peculiar feature of the use of sulfate of copper is that it is not used to any extent in the food products in the countries where the greened vegetables are made. These greened products are reserved almost exclusively for export to England and the United States, where, it is claimed, the consumers prefer this artificial greening. If this be true, it is certainly desirable that the public should be educated to prefer, as they do in other countries, the natural colors of the food products.

At a conference held at the consulate in Bordeaux with some of the representative vegetable and sardine merchants the regulations of the Department of Agriculture in regard to the labeling of food products were fully discust. It was represented by the merchants present that in the case of tins already printed and made up, which owing to a short crop were still held in stock, some concessions should be made, and it was suggested that affidavit be made before the consul as to the number of such cans on hand and that a proper paster, guaranteed not to come off when subjected to the usual vicissitudes of

transit, be affixed. It was upon the basis of these representations that the following food-inspection decision was issued in the following autumn:

(F. I. D. 30.)

THE USE OF PACKAGES MADE OF TIN PLATE, ON WHICH LABELS HAVE BEEN PRINTED FOR PRESERVED VEGETABLES, ETC., ORDERED AND DELIVERED TO MANUFACTURERS PRIOR TO SEPTEMBER 1, 1905.

From the investigations lately made by the Chief of the Bureau of Chemistry, it appears that in a few instances European manufacturers of preserved vegetables, intended for export to the United States, had provided a large number of packages made of tin, on which the labels had been printed previous to the manufacture of the tin cans. The printed matter can not be erased from the cans, nor can it be conveniently covered without destroying the artistic appearance of the packages. These tin cans had been ordered and delivered to the manufacturers before the publication of F. I. D. 26, requiring the presence of preservatives, coloring matters, etc., to be indicated upon the original label and not attached by means of pasters subsequent to September 1, 1905. In many cases considerable expense has been incurred by the manufacturers in the purchase of these tin cans with the labels printed thereon.

Inasmuch as these packages were purchased in good faith and were not intended to disregard the regulations of the law relating to imported food products, permission will be given to use them in packing preserved vegetables for the season of 1906 on the following conditions:

1. That the tin cans in the possession of manufacturers shall have been ordered and delivered previous to September 1, 1905.

2. That the manufacturer shall make a statement before the consul in each case of the number of such packages which he had on hand at the date mentioned.

3. That the manufacturer shall attach a special paster, in a conspicuous place on the label, in such a way as to make it practically irremovable, indicating the presence of the preservative, coloring matter, etc., which may have been used in the preparation of the contents of the package, by the use of type not smaller than long primer capitals, as shown in F. I. D. 6, and submit samples thereof to this Department prior to shipment.

4. That these packages already on hand may be used for the crop of 1906, but not for a longer period.

5. That the importation of these packages into the United States under the regulations above mentioned shall not continue longer than May 1, 1907.

Approved.

JAMES WILSON,

Secretary of Agriculture.

WASHINGTON, D. C., *September 29, 1905.*

Factories preparing mushrooms for export to the United States were also inspected and the methods of manipulation, sorting, cleaning, bleaching, and preserving the mushrooms observed. The principal charge brought against the mushrooms imported has been that of misbranding in cases where pieces and stems not suitable for high grades were canned separately and sent to this country under the name of "Galipedes" or "Hotel mushrooms."

One large factory at Bordeaux was visited which is devoted entirely to canning mushrooms for the American trade. The mushrooms are grown in the quarries which extend for many miles in all directions near Bordeaux, forming caves made by removing the stone for building purposes. These fungi are grown in horse manure, which is carried into the caves usually on the backs of the workmen, put up in beds, and seeded with the proper spores. A mushroom bed will remain in bearing form about three months, when the residue of the manure must be carried out of the cave, and even the spot of ground on which it was is not fit to use again for at least a year. The process of growing is therefore very expensive. The mushrooms are brought into the market in baskets and are worth in the state in which they are plucked about 15 cents a pound. They are all separated by hand, being picked over six or seven times. All superfluous parts are first removed and the mushrooms are dropt into a large tub of water, where they float on the surface. Here they are cleaned with a brush, one at a time, and dark and decayed spots that can not be removed by a brush are cut away. After this process they go to the trimmer, where the extra parts of the stems and the broken and imperfect pieces of the mushrooms are separated, collected, and canned under the name of "Hotel mushrooms." The fungi are carefully sorted at this point into four or five grades according to size. They next go to the sulfur chamber, where they are bleached. They are then trimmed and sterilized in the usual manner. It requires from six to eight women or girls and from three to four men to take care of from 500 to 1,000 pounds of mushrooms per day.

FRENCH SARDINES.

The French sardine factories are mostly on the Bay of Biscay, the majority of them being located south of Brest and between that point and La Rochelle. Nantes is the center of the industry. At the conference held at Bordeaux the character of the oil used in packing was the chief point under discussion.

The question of the making of the oil used in the packing was discussed. There is a disposition on the part of the packers to insist on the theory that the phrase "packed in oil" does not mean in France "packed in olive oil." It was claimed by some that a previous heating of the fish in peanut oil improves both flavor and color, and when subsequently packed in olive oil it was held to be unfair to require the notification on the label of the presence of peanut oil. Attention was called also to the fact that sardines of other countries were often packed under the name of French labels, as it was the general impression that the French pack was better than any other. Attention was called to the information which had been received that Spanish

and Portuguese sardines were either shipped to France and there packed or packed in Spain and Portugal and shipped to France for labeling and reshipment. It is manifestly to the interest of the French packers to suppress practises of this kind.

The methods of preparing sardines for importation to the United States were also studied. It was learned that it is customary to heat the sardines previous to packing in olive oil and peanut oil, and this is one of the reasons why peanut oil has been discovered in so many packages of sardines which were labeled "Packed in pure olive oil." There is no objection to the use of peanut oil for the purpose mentioned, but where the packages are labeled "Packed in pure olive oil," it is held that peanut oil should not occur, or at least only in mere traces.

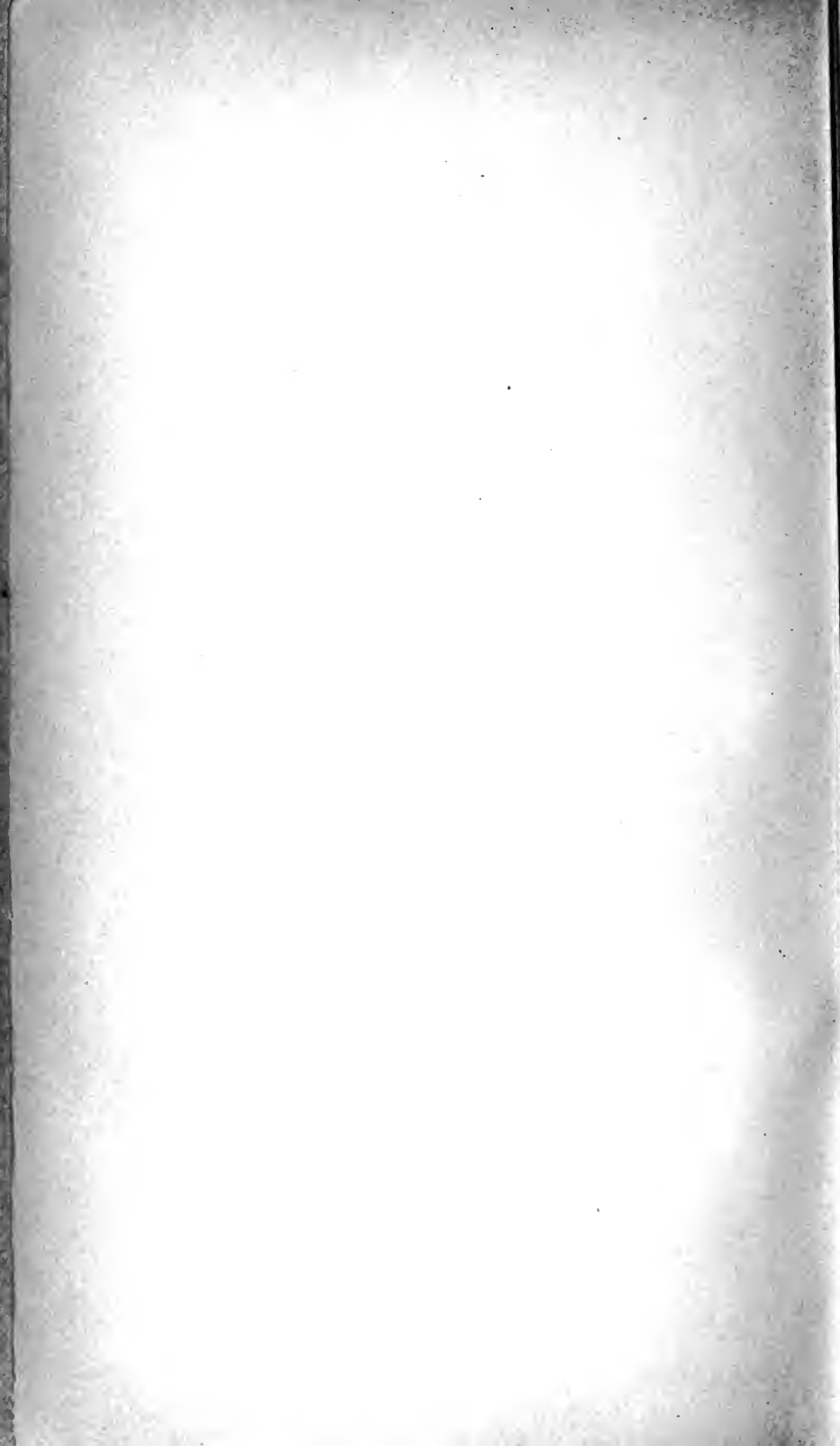
It is a question which is worthy of very grave consideration, in regard to correct labeling, whether a package of sardines or other fish marked "Packed in pure olive oil" or "Packed in olive oil" should be excluded because of the presence of peanut or other vegetable oil commonly used as an adulterant of olive oil. In this connection attention may be called to the fact that at the beginning of the imported food inspection in this country large quantities of the so-called olive oils reaching our shores were adulterated with more or less of the other vegetable oils, such as peanut, cotton seed, and sesame. The heating of the sardines in a cheaper oil than olive oil before the packing must result in the contamination of the olive oil used in packing to an extent easily ascertained on analysis. The oil, therefore, in which the sardines are packed is not pure olive oil, but a mixture of olive oil with another vegetable oil. It is true that in this connection the fish oil itself may be found in the olive oil, but this can in no sense be regarded as an adulteration.

GOVERNMENTAL CERTIFICATES FOR EXPORTED FOOD PRODUCTS.

The Federal inspection of imported foods has already proved effective in securing a better quality of goods offered for import. If the collaboration of the Government officials of the various countries in certifying to the purity of goods which are under Government supervision could be secured, the execution of the law would be greatly facilitated and the character of the imports still further improved. The Department of Agriculture is ready, under authority of Congress, to give a certificate of analysis for all food products offered for export when asked to do so by the exporter. If foreign Governments would take a like action, it is believed that reciprocal good would ensue, and this is especially true of all food products prepared under Government supervision, such as alcoholic beverages, altho this principle could easily be applied to other food products

which, because they pay no tax, are not prepared under official supervision. Another step in the same direction could be taken by holding an international conference on methods of certifying to the purity of food products intended for international commerce. Such a conference would bring together the representatives of the different Governments interested in the several industries and might lead to a uniform method of certification of purity. Inasmuch as the United States is the greatest food-producing country in the world, it seems eminently fitting that the initiative in such an international conference should be taken in this country.

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